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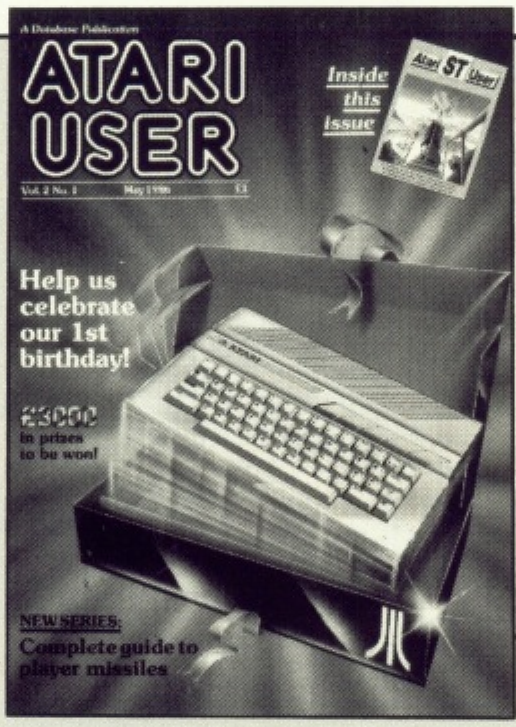
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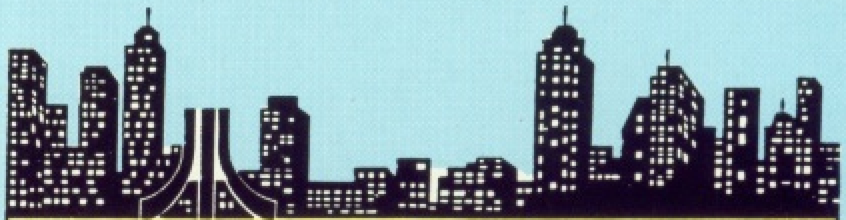
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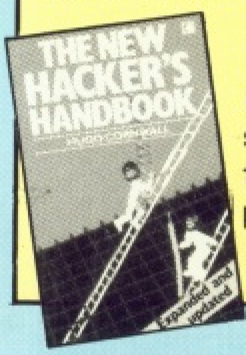


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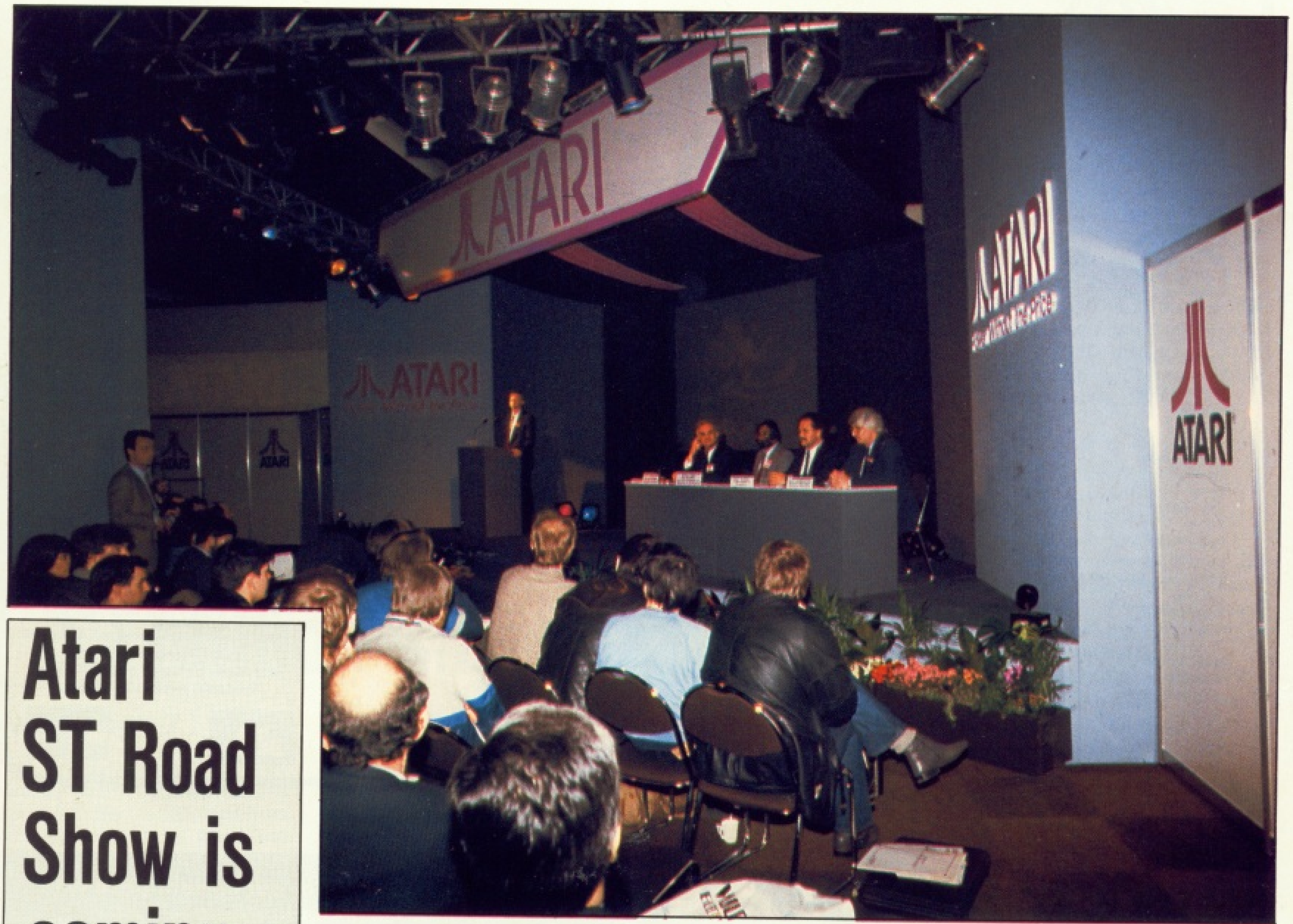
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Andrew Bennett helps you make the most of your ST with his monthly offer of hints and tips.



Atari ST Road Show is coming

THERE are currently more than 1,000 software developers writing programs for Atari ST machines, 400 of them UK-based.

And to keep dealers up to date with this software explosion an Atari ST Road Show is touring the country during the spring.

Presentations at venues in Birmingham, Bristol, Manchester, Leeds and Edinburgh will demonstrate what the 520ST and 1040ST can do for the small to medium sized business.

Leading software houses have been invited to talk about their products, from simple book-keeping programs to CAD/CAM packages, the VT100 terminal emulator and Prestel software.

Dealers will hear a presentation about Atari itself, the marketplace in general, and how best to boost sales of the ST machines.

A 15,000 CROWD BOOST FOR ATARI

THE first Atari Computer Show proved a spectacular success, attracting 5,000 more people than had been expected. In all close to 15,000 people converged on the three day event held at the Novotel, Hammersmith.

Now observers are claiming that this mass demonstration of popular support for the Atari range has effectively re-established the computer company as a market leader in the UK.

So impressed were the party of Atari VIPs who had flown over from California to attend the show that they immediately announced their intention to hold similar events in both Germany and the United States.

This was not only the first Atari Computer Show in the UK, it was the first in the world. Atari's president Sam Tramiel summed up the reaction in one word: Fantastic.

He told *Atari User:* "We couldn't be more pleased. You people over here have really shown us a thing or two. The organisation has been superb, the standard of exhibitors first class and as for the visitors, if those are Atari users here in the UK then we are certainly on the right track.

"I can only thank everyone on behalf of Atari. Naturally when you take over a sick company as we did you are bound to be a bit concerned over what the future has in store, but after this show we realise our efforts have all been worthwhile".

The 70 exhibitors were equally enthusiastic about the success of the show. And no wonder considering that sales over the three days amounted to more than £1 million.

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NEW BENEFITS FOR 8 BIT ENTHUSIASTS

THE resurgence of Atari as a force in the computer industry has led to unexpected benefits for 8 bit enthusiasts.

In a major about face the company is revitalising its approach to the "low end" of its product line which has had to take a back seat to the ST machines since the great Atari revival began a year ago.

A new word processing package has been built around the 130XE to take on the Amstrad PCW8256 in the small business and serious hobbyist arena.

And there are plans to double the memory capacity of the sole surviving Atari 8 bit micro and launch a 256k version.

All this has come about in response to demand from a section of the market that Atari bosses were convinced was declining.

The survival, and growing strength, of the 8 bit user base has surprised and delighted company executives.

They had relegated the low end micros to a secondary role in the remodelled marketing strategy designed around the ST generation of Atari computers.

Production of the 800XL was discontinued and remaining stocks offloaded at bargain prices through Dixons and Curry outlets over Christmas.

At the time Atari promised continued support for the 130XE as its sole ongoing machine in the 8 bit market.

Now the company has gone even further, encouraged by demand from consumers and support from third party suppliers.

The 130XE Super Word Processing Pack comprises a micro, 1050 disc drive, 1027 letter quality printer, AtariWriter Plus and three more pieces of software.

At £349 it undercuts the Amstrad PCW8256 by an impressive £100 and is sure to cause a stir among Alan Sugar's high flyers in Brentwood.

Atari vice-president Sig Hartmann explained the reason behind his firm's new emphasis on the 8 bit market during an interview with *Atari User*.

"We intend to revitalise this section of the market", he said. "We have come to realise that there is definitely a need for machines to serve consumers at the so called low end of the market.

"I have to admit that we have been surprised by the continuing strength of the 8 bit market. It is healthier than ever, and we intend to get our share of the action.

"As well as bringing out the 130XE word processing pack we will be producing a 256k version of the XE and it should be on sale within the next few months".

£1 million sales at Show

From Page 7

first day despite thinking they had sufficient supplies for the full three days – 10 exhibitors actually sold out by 2pm, just four hours after the show had opened.

Typical of these was Compumart whose stand was offering Atari 8 bit computers and peripherals, so you couldn't have found a happier man around than the company's managing director Steve Burke.

"It was just incredible – we ended up selling out completely three times", he said. "The first time was half way through the first day when we had taken easily enough to last a normal show. But we still sold out and had to get more.

"By Saturday afternoon we were in the same situation again so once again we had to restock and by Sunday morning the lot had gone and we just couldn't get any more. It means tens of thousands of pounds worth of business for us.

"So we immediately rebooked a stand for the next show not even knowing when it is going to be".

The last word must go to a typical Atari user. Peter Dobbins, 18, travelled down from Carlisle to attend the show.

"And that's a little bit further than West Ham", he pointed out, "but I'd have travelled from the Antarctic by dog sled to go to this show.

"It was great. Lots of new things and plenty of bargains. I got back what I'd paid out for my rail fare in the savings on my first purchase alone.

"Nothing but nothing is going to keep me away from the next".

WHAT THE EXHIBITORS SAID...

It was a very good show. We felt the strength of it was the contacts made both in the UK and with overseas people. Our business software brought in orders and promises of more than £100,000 and most of it has already been shipped.

It was an ideal venue and overseas visitors told me they were impressed with the ease of travel from Heathrow to the Hotel with its Underground link-up.

– Haba Systems managing director Mike Dale

We really had a super three days. We launched Blue Ribbon and sold out the games by the second day. We just could not get enough to meet demand. It was one of the best shows we have been to and we are certainly going to the next one.

– CDS Software sales manager Martyn Wilson

A super show, really like the old days. Our sales covered the cost of the stand in two days and we were pleased with the profit.

– Llamasoft director Hazel Minter

The show was excellent. Congratulations to Database. We can't wait for them to organise another. It was 100 per cent above what we expected, the sales were just thousands of pounds when we were only expecting hundreds.

– Software Express managing director Jerry Howells

We made excellent contacts with foreign and European visitors. Sales were very good. It was an impressive show, nicely put together.

– Microdeal press officer Jenny Pope

I was pleased there was a split for the games and business sectors. This kept away the noise of the games and the general melee there rather than distracting the business side, which produced good sales.

– Execon director Vernon Hovsepian

It was above expectations. Our software games sales were excellent. We sold out certain games and had to send out for more stock. We were happy with the whole show and with the interest shown by Atari owners which has encouraged us to produce more software for them.

– Tynesoft sales manager Trevor Scott

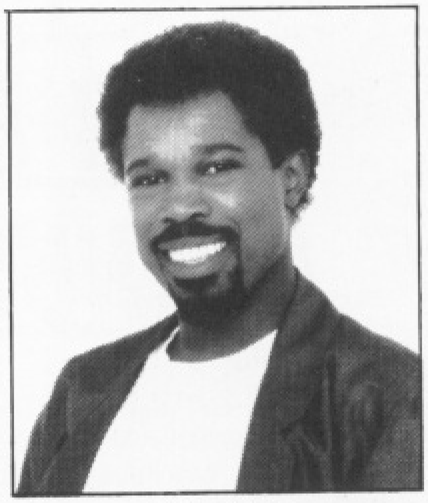
The five year pitch

JACK Tramiel has given himself and Atari five years in which to grab 20 per cent of the world's micro market – or suffer dire consequences.

The colourful Atari chairman told influential US financial paper Investors Daily that sales of ST machines in North America and Europe prove his target is attainable.

But he warned: "If you don't reach 20 per cent of this computer market in five years you're out. You won't get the support from software houses and you won't get the right prices from your suppliers because you won't be able to buy in sufficient volume".

However Tramiel was confident the 20 per cent figure was within his reach "although I don't have the exact timing – it's all a matter of market conditions".



Billy Ocean

Atari is a star's star turn

THE Atari 1040ST has proved a star attraction for chart-topping Billy Ocean. His manager, Laurie Jay, bought the computer to organise plans for a six month world tour which starts in June.

Said Laurie: "The Atari has done everything for us. It has worked out our flight arrangements, listed our hotels and all our venue details.

"But the most useful is that we have been able to draw the stage plans and print them out in colour so they can be forwarded in advance to the venues for preparation".

"It is the first time we have used this computer to arrange things and we are still learning what it can do. We are now two months ahead of schedule, and I cannot believe the amount of work it has saved us".

The compact disc ROM has not been shelved

DESPITE rumours to the contrary, compact disc ROM players still feature prominently in Atari's plans for the future.

Reports that the company has shelved the project indefinitely have been strongly denied by sales and marketing manager Rob Harding.

He told *Atari User:* "Nothing could be further from the truth – Atari will definitely launch a CD ROM player, although the event won't take place for several months.

"There are two reasons for the delay, and both involve factors beyond Atari's control.

"Firstly the ROM player is an extremely software-dependant piece of equipment, and there is a worldwide shortage of CD software capacity.

"Secondly CD mechanism prices are currently too high for us to turn out a product for the mass market that would meet Jack Tramiel's criterion of power without the price.

"And you have to remember we aim to bring out a machine with audio as well as data-reactive capabilities along with other sophisticated features, all of which add considerably to Atari's costs.

"While the CD ROM player is not a viable mass market product for us at the moment, the situation is improving.

"Our partner, Warner Communications, is setting up a plant to manufacture compact discs and this should be operational later this year.

"Also we expect the present high cost of CD mechanisms to come down sharply in the next six to nine months and create the conditions we need to go ahead with the project".

Crime in the past

A CRIME adventure, out for Atari ST users, has a small-time private detective as the hunter – and the hunted.

Activision's Borrowed Time, set in the 1930s, entails tracing 20 suspects who want the hero dead and avoiding being shot, beaten-up or imprisoned demands fast reflexes.

Hugh Rees-Parnall, managing director of Activision, said: "Only the movements of the private eye are controlled, the other bad guys' actions are sudden and unexpected, making the pace frantic".

Price, on disc, is £14.99.

COMPILER SPEECH PROGRAMS

STAND by for a host of new high quality programs for the Atari ST range.

A flurry of activity in software houses has been sparked by the launch by specialist programming language compiler Prospero Software of Pro Fortran-77 for the ST.

The new compiler opens the door to 68000 architecture for professional programmers and developers and is likely to prompt a new generation of Atari ST software.

Pro Fortran-77 will also enable developers to recompile existing mini and mainframe software to run on ST machines.

Atari has enthusiastically welcomed the Prospero initiative. Sales and marketing boss Robert Harding told *Atari User:* "This is an important milestone in the development of the market for the ST.

"We believe it will generate a wave of high quality software allowing users to fully exploit the machines' potential".

Fortran-77 is one of the most widely used high level programming languages among engineers, scientists and academics – and the most popular medium for micro professionals writing their own programs.

Prospero marketing manager Andrew Lucas said: "We recognised the possibilities offered by the Atari ST and other 68000 machines at a very early stage.

"Our compilers will allow micro professionals to unlock the vast library of existing technical software, such as state-of-the-art CAD/CAM for instance, and make it available to Atari users.

"With the power and sophistication of such a machine costing less than £1,000 there are now tremendous opportunities for developers".

Pro Fortran-77 for the Atari ST costs £129.

Lunar sequel

A SEQUEL to last year's chart-topping adventure Red Moon has been released by Level 9 Computing to run on Atari 800XL and 130XE machines.

Price of Magik has more spells and independent creatures to control than Red Moon.

AS the president of Atari, Sam Tramiel – the eldest of Jack's three sons – is in charge of the day-to-day running of the world wide organisation. It is he, second only to his charismatic father, whose decisions will eventually make or break Atari. Here he talks to MIKE COWLEY about his life and the events which have influenced his current thinking.

Sam Tramiel, taking the international r



TO all outward appearances, Sam Tramiel comes across as super capitalist. Rich, relatively young – he's still only 36 – he wears the mantle of wealth easily as befits the heir to a dynasty which one day may well be compared to the Rothschilds.

Yet it hasn't always been like that. An Italian friend brought vivid memories flooding back when he recently recalled the saying: "If you aren't a communist by the time you are 18 you haven't got a heart. But if you aren't a capitalist by the time you are 25, you have no brains".

For that's almost exactly what happened to the eldest son of the man who built Commodore into a billion dollar empire, then turned his back on it to give Atari the kiss of life.

It was 1968 and Sam Tramiel had just finished his first year at university. Like so many of his contemporaries, he was disenchanted with what was happening in the United States in general and in Vietnam in particular.

Soon he began associating with other radical thinkers on the fringe of an extreme left wing front organisation known as the Students for a Democratic Society. Quite naturally his father, who even then was viewed as "the epitomy of the capitalist", objected.

"My father was very straight with me", recalls Sam. "He called me in and said 'You cannot have a Jaguar E type, credit cards and be a communist'.

"I said yes I can. He replied: 'No you can't. The Jaguar is out. The credit cards are going'.

" 'Fine', I said. 'Thank you very much. I don't need any of that' . . . and I took no more money".

So Sam Tramiel turned his back on his wealthy father and went to work to put himself through university. He headed for Canada where schooling was cheaper and took to wearing a hard hat during his vacations while acting as a surveyor on construction sites.

"My father and I still loved each other", he remembers, "but there was a very basic philosophical difference between us. And he could not imagine supporting that philosophy financially – as was his right".

Yet Sam was to undergo a dramatic change in the next couple of years. "Having to support myself and

By MIKE COWLEY

put myself through school, I began to realise what money was all about", he says, "so it wasn't long before I started to shift my ideologies. In fact by the time I finished school I was quite a capitalist".

Not that the mere fact of being without money itself was the prime reason for the transformation. After all Sam Tramiel had hardly been born with a silver spoon in his mouth.

Back in 1950 when Sam dropped in on the world, home was a cramped apartment in the tough tenement district of Lower East Side in Manhattan, New York. And the rent of $15 a month took a huge slice out of the money his father was then earning as a cab driver, having survived the horrors of Auschwitz to emigrate to the States.

By the time he was three young Sam had moved with his family to the New York district of Queens where his father, now a typewriter repair man, had acquired a house. "The truth of the matter was the house wasn't really much bigger than the apartment we had", says Sam.

And once again, they were living in a predominantly immigrant area where the Jews kept to themselves, as did the Poles, the Irish and the blacks.

So Sam could speak only Yiddish until he was five years old and left the shelter of what was little more than a ghetto to venture to kindergarten.

"Pledging allegiance to the flag of the United States was my first English lesson", he recalls. It wasn't to be too long before he found himself doubting the wisdom of it all.

At the age of five Sam was transported to Toronto, which his father judged would be an easier place to compete in than the United States.

By this time Jack Tramiel had set himself up as a dealer in typewriter and adding machines, importing stock from Europe. Little did he realise then but he was laying the foundations of an empire.

The stay in Toronto lasted five years, during which time Sam developed a passion for outdoor sports. Then it was back to New York, but by this time the Tramiel family

business had flourished sufficiently to warrant an up-market address in Long Island.

"The Commodore company had been started by then", says Sam. "We were fully fledged importers of adding machines from Berlin and typewriters from Czechoslovakia. And it wasn't long before my father was able to buy the factory making the adding machines in Germany".

Inevitably with both his father and mother actively involved in the family firm, Sam can only recall one topic ever being discussed around the dining table – business.

"It was always the same", he says, "so much was it part of my life that I was playing the stock markets when I was in my early teens".

Describing himself as "an OK student but not brilliant", Sam Tramiel is best remembered at college as an all round athlete. A champion wrestler, he made both the college football team and the record breaking 880 yard relay squad.

After his brief flirtation with the Karl Marx contingent Sam Tramiel returned to the fold. Clutching his newly-awarded economics degree he threw in his lot with his father at Commodore. "As a family, we had always had the idea of working together", he says. "The Rothschilds had always impressed me and I'd always thought that one day I'd like to see us like they were years ago".

Yet, because he was the boss's son, he was given no privileges. Starting at the bottom in the warehouse, he worked his way up through the departments. "I was always underpaid compared to the other employees", he remembers.

Two years after joining Commodore in California he was transferred to the company's London offices. By this time he was married to his high school sweetheart from Toronto.

Tragically after giving birth to their child, his wife came down with cancer and died some three years later. Accompanied by his baby daughter, Sam returned to California for a few months before accepting a posting to Hong Kong.

He had been out there for a year when he remarried his second wife being a schoolteacher from Toronto.

By this time Commodore was booming with sales of close to $600 million and growing in leaps and bounds.

However like many other sons of successful fathers, Sam Tramiel began to be torn with self doubt. "Could I do it on my own I began to ask myself", he says. "Would it have all been possible if I'd not been Jack's son in the Commodore framework?

"So my father and I had a long talk and it resulted in my leaving Commodore and setting up on my own in Hong Kong".

r oute to success

Within two years Sam Tramiel had proved his point. He controlled four companies with the help of Chinese partners, making watches, telephones, computer peripherals and games. "We were typical Hong Kong OEM suppliers", he says.

It was the illness of a friend which led him back to Commodore. The man in question had been running the Hong Kong operation for the company when failing health forced him to take early retirement.

Who then could Commodore turn to to fill the gap in Hong Kong, the corporation's key manufacturing centre? Sam Tramiel was persuaded to help out for 12 months.

"It was a crazy time", he recollects. "Every week I received phone calls saying 'Make more C64's. Make more C64s. The market simply couldn't get enough".

And in the meantime his wife gave birth to their "Chinese, Jewish, Canadian" son. At the end of the year's contract, Sam Tramiel was convinced that his future lay with his father in Commodore.

So he kept control of the Far East situation but moved to Japan to get a better understanding of the key component market there. He remained in Tokyo for nine months until the news broke that his father had left Commodore following a bitter dispute with the chairman.

That was in January 1984. Sam flew back to California the following month and told Commodore he would be happy to stay on if required.

Five months later he too resigned after becoming frustrated through a seeming inability of the Commodore management to make decisions following his father's departure.

While working his month's notice Sam Tramiel had lengthy discussions with his father over what they would do in the future. "By this time my father had accumulated a vast amount of wealth", he revealed. "So we were faced with a number of alternatives.

"Should we become merchant bankers?

"Should we just take it easy?

"Should we go back into the computer business? What should we do?"

By the time he left Commodore the opportunity to buy Atari had arisen. With a number of outstanding design experts – including his own brother Leonard who had just gained a degree in astrophysics from the university of Columbia, the Tramiel clan began to think seriously about computers again.

"Our people went to talk to Warner Communications, and to cut a long story short, ended up buying Atari", says Sam Tramiel. "We had expected to find a sick company, but what we really found was a complete shambles".

It is Sam Tramiel's conviction to this day that Atari will only become a world force if it remains internationally minded. "We see this as the key", he says.

"When we designed the ST we emphasised the international aspect, so we had a German keyboard, a French keyboard, an Italian keyboard, a UK keyboard right from the word go – not coming along later. TOS was designed in four languages".

The man coordinating this global approach by Atari is Sam Tramiel himself. "I see myself as an international citizen", he insists. In fact, the Atari president holds a Canadian rather than an American passport.

"The reason for this is I feel much more like a Canadian who are more open in their views than the Americans who tend to be inward looking and chauvenistic.

"And perhaps there's just that little bit of radical left in me after all . . ."

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IN-I-GO JOE, the world famous archaeologist and explorer, triumphs again, finding the long lost treasure of King Muneebags in the labyrinths below the king's recently discovered tombs.

It only remains now for Joe to escape. But it's easier said than done. For the caverns in which he is now lost are full of perils.

The king's ghost wanders there seeking revenge, assisted by a mindless zombie. The slightest touch by these will mean instant disintegration.

Treacherous sulphur pits wait to catch the unwary. The caves themselves are old and crumbly and it is easy to find yourself cut off in a dead end where the ghost will soon find you.

If this was not enough, the designers of the local underground have encroached on the caverns and you are in constant danger of being run over by the 8.15 to the city centre.

Your escape is also blocked by five doors and you must find the keys hidden somewhere in the caves before you can pass them. Joe himself has lost his knife and trusty whip and ran clean out of bullets some time ago. His only weapons now are his wits and agility.

So you'll need plenty of luck as you guide Joe to freedom.

Playing the game is straightforward. When run for the first time the screen will go black for 90 seconds, but after this will start immediately. You may also see a vertical coloured stripe, but Don't Panic.

Joe is controlled by joystick I and he will move instantly in the direction commanded. The caves consist of a maze of 100 rooms and must be completed in the correct sequence.

I advise you to draw a map as you go along. If you hit a wall it will knock you into the centre of the room – and possible danger – and may daze you.

Picking up a key is performed by touching it. If you then touch the corresponding door it will open and stay open. The wrong key and you will be knocked back.

Occasionally the king's curse will result in your developing a shadow. Watch for this and if it occurs you must run over it to make it disappear.

If you are killed you will be reincarnated, but you only get three lives.

The program itself fits tightly into 48k. It uses a complicated vertical blank interrupt to move the players, a redefined character set and Antic Mode 4 (Graphics 12 on XL/XEs). It will however, work on all Ataris with sufficient memory.

The lengthy initialisation is because of the large amount of data for the machine code routines, VBI, character set and players.

The maze is held in the data statements from line 2000 to 2099. The first four letters hold the exits, the next number is the type of cave, the next the information line and the last number is the degree of difficulty for that room. This is only relevant in type 3 and 4 rooms.

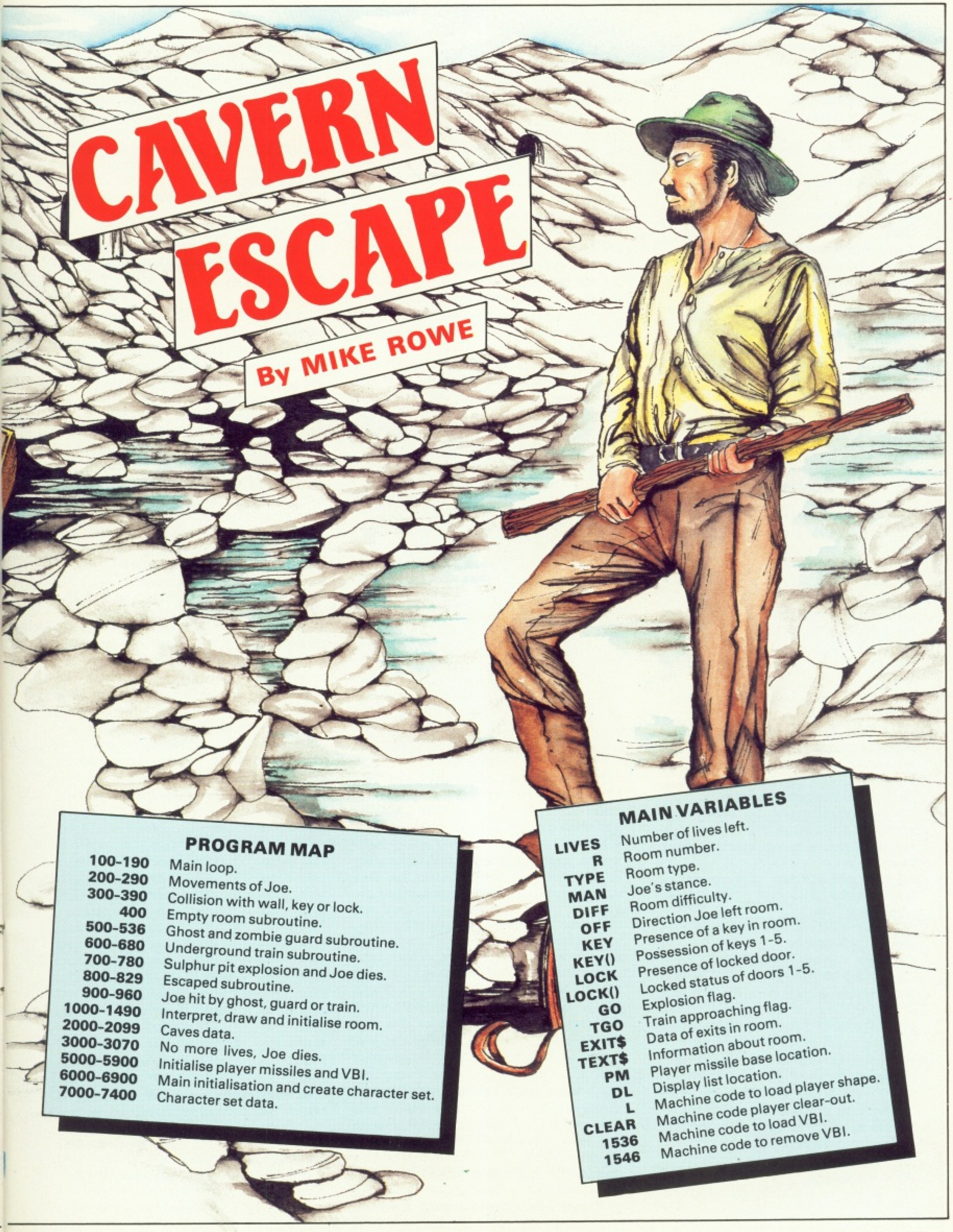
The difficulty of the game can be altered by changing these – the higher the number the more difficult, up to a maximum of 255.

By altering these lines you create a different maze without needing to rewrite the whole program.

I'll be providing an editing program in a future issue. This will enable you to redesign Cavern Escape at will.

CAVERN ESCAPE

By MIKE ROWE



PROGRAM MAP

100-190	Main loop.
200-290	Movements of Joe.
300-390	Collision with wall, key or lock.
400	Empty room subroutine.
500-536	Ghost and zombie guard subroutine.
600-680	Underground train subroutine.
700-780	Sulphur pit explosion and Joe dies.
800-829	Escaped subroutine.
900-960	Joe hit by ghost, guard or train.
1000-1490	Interpret, draw and initialise room.
2000-2099	Caves data.
3000-3070	No more lives, Joe dies.
5000-5900	Initialise player missiles and VBI.
6000-6900	Main initialisation and create character set.
7000-7400	Character set data.

MAIN VARIABLES

LIVES	Number of lives left.
R	Room number.
TYPE	Room type.
MAN	Joe's stance.
DIFF	Room difficulty.
OFF	Direction Joe left room.
KEY	Presence of a key in room.
KEY()	Possession of keys 1-5.
LOCK	Presence of locked door.
LOCK()	Locked status of doors 1-5.
GO	Explosion flag.
TGO	Train approaching flag.
EXIT$	Data of exits in room.
TEXT$	Information about room.
PM	Player missile base location.
DL	Display list location.
L	Machine code to load player shape.
CLEAR	Machine code player clear-out.
1536	Machine code to load VBI.
1546	Machine code to remove VBI.

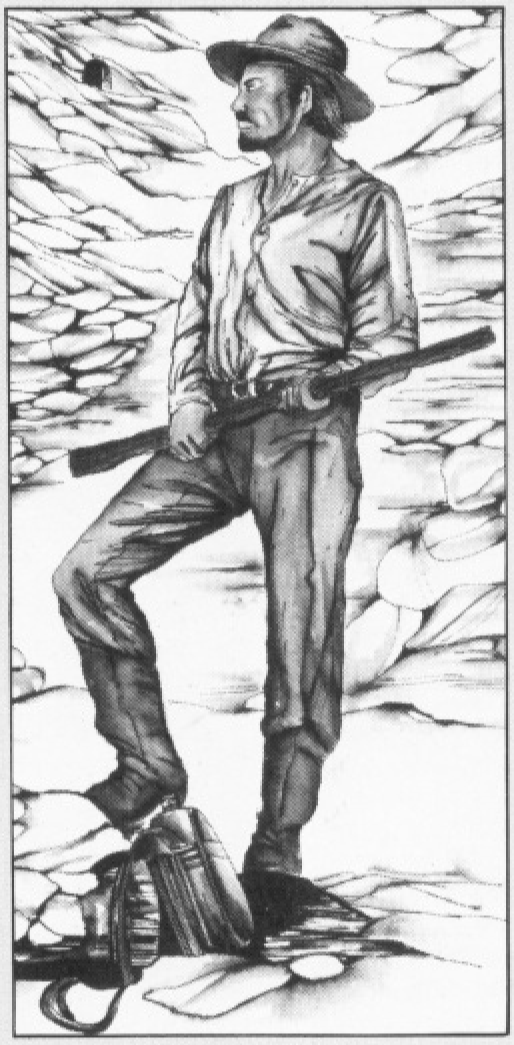
```
10 REM  CAVERN ESCAPE Mike Rowe 1/86
20 GOSUB 6000
40 GOSUB 1000
100 REM  MAIN LOOP
110 IF PEEK(1560)<30 THEN OFF=-10:GOSU
B 1000
120 IF PEEK(1560)>180 THEN OFF=10:GOSU
B 1000
130 IF PEEK(1556)<50 THEN OFF=-1:GOSUB
 1000
140 IF PEEK(1556)>200 THEN OFF=1:GOSUB
 1000
150 IF PEEK(53252)<>0 THEN GOSUB 300
155 IF PEEK(53260)<>0 THEN 900
160 S=STICK(0):IF S=13 OR S=14 THEN ST
=1
165 IF S=5 OR S=6 OR S=7 THEN ST=2
170 IF S=9 OR S=10 OR S=11 THEN ST=3
175 GOSUB 200:SOUND 0,0,0,0
185 GOSUB 300+TYPE*100
190 GOTO 100
200 REM  MAN ROUTINES
205 MAN=MAN+1:IF MAN=5 THEN MAN=1
210 ON ST GOTO 220,240,260
220 IF S=15 THEN A=USR(L,0,PM+140):RET
URN
222 SOUND 0,50,2,10:ON MAN GOTO 224,22
6,224,228
224 A=USR(L,0,PM+140):RETURN
226 A=USR(L,0,PM+120):RETURN
228 A=USR(L,0,PM+160):RETURN
240 IF S=15 THEN A=USR(L,0,PM):RETURN
242 SOUND 0,100,2,10:ON MAN GOTO 244,2
46,244,248
244 A=USR(L,0,PM+20):RETURN
246 A=USR(L,0,PM):RETURN
248 A=USR(L,0,PM+40):RETURN
260 IF S=15 THEN A=USR(L,0,PM+60):RETU
RN
262 SOUND 0,100,2,10:ON MAN GOTO 264,2
66,264,268
264 A=USR(L,0,PM+80):RETURN
266 A=USR(L,0,PM+60):RETURN
268 A=USR(L,0,PM+100):RETURN
290 RETURN
299 REM  PLAYFIELD COLLISION
300 COL=PEEK(53252):ON COL GOTO 380,31
0,310,310,310,310,310,320
310 SOUND 3,5,10,15:A=USR(1546):A=USR(
CLEAR,0)
315 POKE 1556,120:POKE 1560,120:A=USR(
L,0,PM):A=USR(1536):POKE 53278,0:SOUND
 3,0,0,0:RETURN
320 IF KEY(LOCK)=0 THEN POKE 1556,120:
POKE 53278,0:RETURN
330 SOUND 3,100,2,15:POSITION 37,9:? "
  ":FOR I=1 TO 20:NEXT I
331 POSITION 37,10:? "  ":FOR I=1 TO 2
0:NEXT I
332 POSITION 37,11:? "  ":FOR I=1 TO 2
0:NEXT I:SOUND 3,0,0,0
335 LOCK(LOCK)=0:POKE 53278,0:RETURN
350 RETURN
380 IF KEY<>0 THEN KEY(KEY)=1:POSITION
 KEY*3,22:? "&";:POSITION 20,10:? " "
385 FOR I=100 TO 20 STEP -1:SOUND 3,I,
10,10:NEXT I:SOUND 3,0,0,0
390 POKE 53278,0:RETURN
399 REM  ROOM 1
400 FOR I=1 TO 5:NEXT I:POKE 77,0:RETU
RN
499 REM  ROOM 2
500 I=INT(RND(0)+0.5)
520 A=(SGN(PEEK(1557+I)-PEEK(1556)))+(
SGN(PEEK(1561+I)-PEEK(1560)))*5+530
521 GOTO A
524 POKE 1585+I,5:RETURN
525 POKE 1585+I,13:RETURN
526 POKE 1585+I,9:RETURN
529 POKE 1585+I,7:RETURN
530 RETURN
531 POKE 1585+I,11:RETURN
534 POKE 1585+I,6:RETURN
535 POKE 1585+I,14:RETURN
536 POKE 1585+I,10:RETURN
599 REM  ROOM 3
600 IF TGO=0 AND PEEK(53770)>DIFF THEN
 FOR I=1 TO 4:NEXT I:RETURN
605 IF TGO=0 THEN TGO=1:DIR=0:IF RND(0
)<0.5 THEN DIR=40
610 SOUND 1,50,8,TGO/2:TGO=TGO+2:IF TG
O<28 THEN RETURN
620 TGO=29:GOTO 630+DIR
```



```
630 IF TGO>27 THEN POKE 1586,7
631 TGO=TGO-1:IF PEEK(1558)<220 THEN R
ETURN
635 SOUND 1,0,0,0:POKE 1558,0:POKE 158
6,15:TGO=0:RETURN
670 IF TGO>27 THEN POKE 1585,13:POKE 7
05,10
671 TGO=TGO-1:IF PEEK(1561)<200 THEN R
ETURN
675 SOUND 1,0,0,0:POKE 1561,1:POKE 158
5,15:TGO=0:POKE 705,0
680 A=USR(1546):A=USR(CLEAR,1):A=USR(L
,1,PM+200):A=USR(1536):RETURN
699 REM  ROOM 4
700 IF GO=0 AND PEEK(53770)>DIFF THEN
FOR I=1 TO 4:NEXT I:RETURN
705 GO=GO+1
710 ON GO GOTO 720,730,740,750,760,770
,780
720 SOUND 3,255,0,GO*2:EX=RND(0)*135+6
0:EY=RND(0)*125+40
725 POKE 1557,EX:POKE 1561,EY:RETURN
730 SOUND 3,255,0,GO*2:A=USR(L,T,PM+26
0):RETURN
740 SOUND 3,255,0,GO*2:A=USR(L,T,PM+26
4):RETURN
750 SOUND 3,255,0,GO*2:A=USR(L,T,PM+27
0):RETURN
760 SOUND 3,255,0,GO*2:A=USR(L,T,PM+28
0):RETURN
770 SOUND 3,255,0,GO*2:POKE 1557,EX-4:
POKE 53256+T,1:A=USR(L,T,PM+300):RETUR
N
780 SOUND 3,0,0,0:A=USR(CLEAR,T):POKE
53256+T,0:GO=0:RETURN
799 REM  ROOM 5
800 FOR I=1 TO 4:IF PEEK(53279)<>7 THE
N RUN
810 NEXT I
820 RETURN
899 REM  COLLISION WITH ENEMY
900 A=USR(1546):GO=2
910 T=0:EX=4
920 FOR I=1 TO 5:EX=3^3:GOSUB 700:NEXT
 I:POKE 53256,0
930 FOR I=0 TO 3:SOUND I,0,0,0:NEXT I
950 LIVES=LIVES-1:IF LIVES=0 THEN 3000
960 R=0:OFF=0:GOSUB 1000:GOTO 100
999 REM  DRAW ROOMS
1000 IF PEEK(53252)<>0 THEN GOTO 150
1010 A=USR(CLEAR,0):A=USR(CLEAR,1):A=U
SR(CLEAR,2):A=USR(CLEAR,3):POKE 559,0
1020 IF OFF=-10 THEN POKE 1560,180
1021 IF OFF=10 THEN POKE 1560,30
1022 IF OFF=-1 THEN POKE 1556,200
1023 IF OFF=1 THEN POKE 1556,50
1040 FOR I=0 TO 3:SOUND I,0,0,0:NEXT I
1050 R=R+OFF:RESTORE 2000+R
1060 READ EXIT$,TYPE,TEXT$,DIFF
1065 KEY=0:LOCK=0:POKE 53257,0
1070 ? CHR$(125)
1080 ON TYPE GOSUB 1100,1200,1300,1250
,1400
1085 POSITION 0,21:? "ROOM ";R:POSITIO
N 12,21:? "LIVES ";LIVES:POSITION 20,2
1:? TEXT$
1090 FOR I=1 TO 5:POSITION I*3,22:? CH
R$(32+6*(KEY(I)=1));:NEXT I
1095 POKE 559,62:A=USR(1536):A=USR(L,0
,PM):POKE 53278,1:RETURN
1100 POSITION 1,0:? "zyzzyzyyzyyzyzzyz
yzzyyyzyzyzyzyzzyzyzy"
1110 ? "yfefghezyfehgfezhgfefghehgfefg
fgheyhez"
1120 ? "zm     gh
     qy"
1121 ? "zn    ",,,"       rz"
1122 ? "yp    ",,,"       tz"
1123 ? "ym    ",,,"       qy"
1124 ? "zo    ",,,"       ry"
1125 ? "yn    ",,,"       qz"
1126 ? "ym    ",,,"       sy"
1127 ? "zo    ",,,"       ry"
1128 ? "zo    ",,,"       tz"
1129 ? "zn    ",,,"       tz"
1130 ? "yp    ",,,"       qy"
1131 ? "zp    ",,,"       rz"
1132 ? "ym    ",,,"       qz"
1133 ? "zn    ",,,"       sz"
1134 ? "zn    ",,,"       sz"
1135 ? "zm    ",,,"       sy"
1136 ? "zn                       ad
     ry"
1140 POSITION 1,19:? "zbabcdadcbabcdaz
bcbadabcdczybcdabayday"
1150 ? "zyzyyzyzyzzzyzyyzyzyzyzyzyzyyz
yzyzyzyy"
1160 IF TYPE=1 THEN SETCOLOR 2,3,4:SET
```

```
COLOR 4,0,0:SETCOLOR 1,1,8:IF TEXT$="
" THEN TEXT$="EMPTY CAVE"
1170 IF EXIT$(1,1)="N" THEN POSITION 1
8,0:? "  ":POSITION 18,1:? "  "
1171 IF EXIT$(2,2)="S" THEN POSITION 1
8,19:? "  ":POSITION 18,20:? "  "
1172 IF EXIT$(3,3)="W" THEN POSITION 1
,9:? " ":POSITION 1,10:? " ":POSITIO
N 1,11:? " "
1173 IF EXIT$(4,4)="E" THEN POSITION 3
7,9:? " ":POSITION 37,10:? " ":POSIT
ION 37,11:? " "
1180 IF R=90 THEN KEY=1
1181 IF R=23 THEN KEY=2
1182 IF R=91 THEN KEY=3
1183 IF R=94 THEN KEY=4
1184 IF R=9 THEN KEY=5
1185 IF R=22 THEN LOCK=1
1186 IF R=82 THEN LOCK=2
1187 IF R=38 THEN LOCK=3
1188 IF R=67 THEN LOCK=4
1189 IF R=85 THEN LOCK=5
1190 IF LOCK(LOCK)=1 THEN POSITION 37,
9:? "[illegible]":POSITION 37,10:? "[illegible]":POSITIO
N 37,11:? "[illegible]"
1191 IF KEY(KEY)=0 AND KEY<>0 THEN POS
ITION 20,10:? "&"
1195 RETURN
1200 GOSUB 1100
1210 POKE 1557,60:POKE 1558,200:POKE 1
561,180:POKE 1562,50:POKE 705,10
1220 A=USR(L,1,PM+220):A=USR(L,2,PM+24
0)
1230 POKE 1577,1:POKE 1578,1
1235 SETCOLOR 1,12,8:SETCOLOR 4,0,0:SE
TCOLOR 2,9,4:IF TEXT$=" " THEN TEXT$="
GUARDS!"
1240 RETURN
1250 SETCOLOR 1,1,4:SETCOLOR 4,4,0:SET
COLOR 2,0,0:IF TEXT$=" " THEN TEXT$="S
ULPHUR PITS"
1260 GOSUB 1100
1270 POKE 1585,15:T=1:POKE 705,74
1290 RETURN
1299 REM  TRAINS CAVERN 
1300 POKE 1558,0:POKE 1557,122:POKE 15
62,117:POKE 1561,1:A=USR(L,2,PM+180):A
=USR(L,1,PM+200)
1305 POKE 1577,3:POKE 1578,3:POKE 1585
,0:POKE 1586,0:POKE 705,0
1310 POSITION 1,0
1320 FOR I=1 TO 9:? "uuuuuuuuuuuuuuuuv
   uuuuuuuuuuuuuuuuuuuu":NEXT I
1330 POSITION 1,12
1340 FOR I=1 TO 9:? "uuuuuuuuuuuuuuuuv
   uuuuuuuuuuuuuuuuuuuu":NEXT I
1350 I=14:J=2:GOSUB 1390:J=17:GOSUB 13
90:I=5:J=6:GOSUB 1390:I=33:GOSUB 1390
1360 I=12:J=12:GOSUB 1390:I=28:GOSUB 1
390
1370 SETCOLOR 1,3,8:SETCOLOR 4,0,0:IF
TEXT$=" " THEN TEXT$="SUBWAY"
1380 RETURN
1390 POSITION I,J:? "v   ":POSITION I,
J+1:? "v   ":POSITION I,J+2:? "v   ":R
ETURN
1400 GOSUB 1100
1410 SETCOLOR 4,0,0:SETCOLOR 1,15,12:S
ETCOLOR 2,11,6:SETCOLOR 0,1,4
1420 FOR I=1 10 20:POSITION RND(0)*36+
2,RND(0)*16+2:? "%";:NEXT I
1430 FOR I=1 TO 10:POSITION RND(0)*32+
3,RND(0)*16+2:? "'(";:NEXT I
1490 RETURN
1999 REM  ROOM/MAZE DATA 
2000 DATA XSXE,1,START,5
2001 DATA XXWE,4, ,5
2002 DATA XSWX,1, ,5
2003 DATA XSXX,4, ,100
2004 DATA XSXE,1, ,5
2005 DATA XXWE,2, ,5
2006 DATA XXWE,2, ,5
2007 DATA XSWX,1, ,5
2008 DATA XSXE,4, ,50
2009 DATA XXWX,1,KEY NUMBER 5,5
2010 DATA NSXX,1, ,5
2011 DATA XXXE,4, ,100
2012 DATA NSWE,3, ,10
2013 DATA NXWE,1, ,5
2014 DATA NSWE,3, ,10
2015 DATA XXWE,2, ,5
2016 DATA XXWX,4, ,100
2017 DATA NSWX,1, ,5
2018 DATA NXWX,1, ,5
2019 DATA XSWX,2, ,5
2020 DATA NSXX,2, ,5
2021 DATA XXXX,2,DEAD END!,5
2022 DATA NXXE,1,LOCKED DOOR 1,5
2023 DATA XXWX,1,KEY NUMBER 2,5
2024 DATA NXXE,2, ,5
2025 DATA XXWE,2, ,5
2026 DATA XXXX,2,DEAD END!,5
2027 DATA NSXE,2, ,5
2028 DATA XXWX,4, ,100
2029 DATA NSXX,2, ,5
2030 DATA NSXE,2, ,5
2031 DATA NSWE,3, ,5
2032 DATA XSWX,1, ,5
2033 DATA XXXX,2,DEAD END!,5
2034 DATA XSWX,2, ,5
2035 DATA XSXE,2, ,5
2036 DATA XSWE,4, ,50
2037 DATA NSWX,1, ,5
2038 DATA XSXE,1,LOCKED DOOR 3,5
2039 DATA NXWX,4, ,120
2040 DATA NXXX,2, ,5
2041 DATA NSXX,1, ,5
2042 DATA NXXE,1, ,5
2043 DATA XSWX,1, ,5
2044 DATA NSXX,4, ,30
2045 DATA-NSXX,2, ,5
2046 DATA NSXX,2, ,5
2047 DATA NXXE,4, ,50
2048 DATA NSWE,3, ,20
2049 DATA XSWE,2, ,5
2050 DATA XSXE,1, ,5
2051 DATA NSWE,3, ,5
2052 DATA XXWE,2, ,5
2053 DATA NSWE,3, ,10
2054 DATA NSWX,1, ,5
2055 DATA NXXE,1, ,5
2056 DATA NSWE,3, ,30
2057 DATA XSWX,2, ,5
2058 DATA NXXE,2, ,5
2059 DATA NXWX,2, ,5
2060 DATA NSXX,1, ,5
2061 DATA NXXE,1, ,5
2062 DATA XSWE,2, ,5
2063 DATA NXWX,1, ,5
2064 DATA NSXX,2, ,5
2065 DATA XSXX,4, ,200
2066 DATA NXXX,4, ,200
2067 DATA NXXE,1,LOCKED DOOR 4,5
2068 DATA XSWE,2, ,5
2069 DATA XXXX,2,DEAD END!,5
2070 DATA NXXE,1, ,5
2071 DATA XSWX,2, ,5
2072 DATA NSXX,4, ,20
2073 DATA XXXE,4, ,200
2074 DATA NSWX,2, ,5
2075 DATA NSXE,2, ,5
2076 DATA XXWE,4, ,150
2077 DATA XXWE,2, ,5
2078 DATA NSWE,3, ,50
2079 DATA XXWX,4, ,5
2080 DATA XSXE,1, ,5
2081 DATA NXWX,1, ,5
2082 DATA NXXE,1,LOCKED DOOR 2,5
2083 DATA XSWX,2, ,5
2084 DATA NSXX,4, ,60
2085 DATA NSXE,1,LOCKED DOOR 5,5
2086 DATA XSWX,2, ,5
2087 DATA XXXE,4, ,200
2088 DATA NXWE,1, ,5
2089 DATA XXWX,4, ,200
2090 DATA NXXX,1,KEY NUMBER 1,5
2091 DATA XXXE,1,KEY NUMBER 3,5
2092 DATA XXWE,4, ,20
2093 DATA NXWX,1, ,5
2094 DATA NXXX,1,KEY NUMBER 4,5
2095 DATA XXXX,2,DEAD END!,5
2096 DATA NXXE,2, ,5
2097 DATA XXWE,2, ,5
2098 DATA XXWE,2, ,5
2099 DATA XXXX,5,ESCAPE!,5
3000 REM  MAN DIES 
3010 A=USR(1546):FOR I=0 TO 255:SOUND
0,I,10,10:NEXT I:SOUND 0,0,0,0
3020 FOR I=0 TO 3:A=USR(CLEAR,I):NEXT
I
3030 POKE 53277,0
3040 POSITION 0,21:? "      game  over
      PRESS  START    "
3060 IF PEEK(53279)=7 THEN 3060
3070 RUN
5000 REM  PLAYER MISSILE VBI ROUTINE 
5010 L=32256:CLEAR=32210
5020 IF PEEK(32000)=72 THEN 5300
5030 RESTORE 5100
5040 FOR I=1536 TO 1587:READ A:POKE I,
A:NEXT I
5042 FOR I=32000 TO 32194:READ A:POKE
I,A:NEXT I
5044 FOR I=32256 TO 32328:READ A:POKE
I,A:NEXT I
5046 FOR I=32210 TO 32241:READ A:POKE
I,A:NEXT I
5100 DATA 104,160,0,162,125,169,7,76,9
2,228,104,160,98,162,228,169,7,76,92,2
28
5110 DATA 120,120,120,120,120,57,81,10
5,15,15,15,15,0,0,0,0,52,53,54,55,2,2,
2,4,0,15,15,15,15,15,15,15
5120 DATA 72,138,72,152,72,162,0,189,1
20,2,29,44,6,160,15,56,176,32,201,15,2
40,28,201,14,208,2,160,13,201,13
5130 DATA 208,2,160,14,201,11,208,2,16
0,7,201,7,208,2,160,11,192,15,240,6,61
,48,6,157,28,6,152,61,44,6
5140 DATA 157,44,6,232,224,4,144,195,1
62,0,189,32,6,133,203,189,36,6,133,204
,189,40,6,133,209,198,209,16,7,232
5150 DATA 224,4,144,232,176,91,189,28,
```

```
6,133,207,70,207,176,26,188,24,6,192,1
,240,19,208,1,200,177,203,240,6,136
5160 DATA 145,203,200,208,245,136,145,
203,222,24,6,70,207,176,29,188,24,6,20
0,192
5170 DATA 254,176,21,177,203,208,247,1
36,177,203,240,6,200,145,203,136,208,2
45,200,145
5180 DATA 203,254,24,6,70,207,176,3,22
2,20,6,70,207,176,3,254,20,6,189,20,6,
157,0,208,24,144,154
5190 DATA 104,168,104,170,104,76,98,22
8
5200 DATA 234,234,234,104,104,104,170,
189,32,6,133,186,189,36,6,133,187,104,
133,213,104,133,212,189,24
5210 DATA 6,133,195,169,0,164,195,136,
136,145,186,200,234,145,186,200,234,23
4,234,162,0,161,212,240,11
5220 DATA 145,186,230,212,200;192,255,
176,11,208,241,169,0,145,186,200,145,1
86,234,234,96,234,234
5250 DATA 32,11,6,104,104,104,170,189,
32,6,133,186,189,36,6,133,187
5260 DATA 169,0,168,234,145,186,200,19
2,255,144,248,32,1,6,96
5300 POKE 704,154:POKE 705,10:POKE 706
,170:POKE 707,26
5310 A=PEEK(106)-16:POKE 54279,A:PM=25
6*A
5320 FOR I=4 TO 7:POKE 1560+I,A+I:NEXT
 I
5330 FOR I=1568 TO 1571:POKE I,0:NEXT
I
5340 POKE 53277,3
5350 IF PEEK(PM)=24 THEN 5900
5500 FOR I=PM TO PM+319:READ A:POKE I,
A:NEXT I
5510 DATA 24,60,24,28,24;16,24,24,24,2
4,28,26,24,24,24,28,16,24,0,0
5520 DATA 24,60,24,28,24,16,24,58,92,5
6,24,24,24,60,102,194,131,128,0,0
5530 DATA 24,60,24,28,24,16,24,24,24,5
6,24,28,24,24,20,126,80,24,0,0
5540 DATA 24,60,24,56,24,8,24,24,24,24
,56,88,24,24,24,56,8,24,0,0
5550 DATA 24,60,24,56,24,8,24,92,58,28
,24,24,24,60,102,67,193,1,0,0
5560 DATA 24,60,24,56,24,0,24,24,24,28
,24,56,24,24,40,126,10,24,0,0
5570 DATA 24,60,24,24,24,24,60,60,60,2
8,28,28,24,24,24,16,16,16,0,0
5580 DATA 24,60,24,24,24,24,60,60,60,6
0,60,60,24,24,24,24,24,24,0,0
5590 DATA 24,60,24,24,24,24,60,60,60,5
6,56,56,24,24,24,8,8,8,0,0
5600 DATA 60,126,173,181,173,181,173,1
81,173,126,60,0,0,0,0,0,0,0,0,0
5610 DATA 60,126,66,195,255,239,247,23
9,247,239,247,255,195,66,126,60,0,0,0,
0
5620 DATA 24,60,126,90,255,255,231,90,
126,126,60,60,28,24,24,8,8,8,0,0
5630 DATA 60,60,102,60,60,24,24,255,18
9,173,181,173,52,44,60,0,0,0,0,0
5640 DATA 8,32,16,0,16,8,32,4,16,0,16,
4,32,72,18,68,16,0,0,0
5650 DATA 8,32,2,68,17,132,66,8,16,0,0
,0,0,0,0,0,0,0,0,0
5660 DATA 16,4,64,2,40,4,130,80,9,32,2
0,128,34,8,16,0,0,0,0,0
5900 A=USR(1536):RETURN
6000 REM  MAIN INITIALIZATION
5508 R=0
6010 DIM TEXT$(20),EXIT$(4),KEY(5),LOC
K(5)
6020 FOR I=1 TO 5:KEY(I)=0:LOCK(I)=1:N
EXT I
6030 POKE 559,0
6100 REM  CREATE SCREEN
6110 GRAPHICS 0:POKE 82,1:POKE 752,1
6120 DL=PEEK(560)+PEEK(561)*256
6130 POKE DL+3,68:FOR I=DL+6 TO DL+25:
POKE I,4:NEXT I
6140 POKE DL+26,7:POKE DL+27,6:POKE DL
+28,4
```



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6150 LIVES=3:GO=0:TGO=0:R=0
6190 GOSUB 5000
6200 REM  NEW CHARACTER SET
6205 IF PEEK(33800)=12 THEN 6250
6210 RESTORE 7000
6220 FOR I=0 TO 71:READ A:POKE 33792+I
,A:NEXT I
6230 FOR I=128 TO 207:READ A:POKE 3379
2+I,A:NEXT I
6240 FOR I=264 TO 471:READ A:POKE 3379
2+I,A:NEXT I
6245 FOR I=776 TO 983:READ A:POKE 3379
2+I,A:NEXT I
6250 POKE 756,132
6900 RETURN
7000 DATA 0,0,0,0,0,0,0,0,12,12,12,24,
24,0,48,48,0,0,0,0,0,0,0,0
7010 DATA 0,63,63,63,63,63,63,63,0,63,
63,63,51,63,63,63,32,184,236,184,32,16
,16,16
7020 DATA 20,16,20,16,84,68,68,84,0,0,
0,0,0,195,51,15,0,0,0,0,0,48,51,252
7050 DATA 0,30,51,51,102,102,60,0,0,12
,12,12,24,24,24,0
7060 DATA 0,30,51,6,28,48,124,0,0,63,6
,28,12,102,60,0,0,6,12,59,102,127,12,0
7070 DATA 0,31,48,60,6,102,60,0,0,30,4
8,60,102,102,60,0,0,63,6,12,24,48,96,0
7080 DATA 0,30,51,30,51,102,60,0,0,30,
51,30,6,12,56,0
7110 DATA 0,12,30,54,102,126,102,0,0,6
2,54,60,102,102,124,0,0,30,51,48,96,10
2,60,0
7120 DATA 0,60,54,51,102,108,120,0,0,6
2,48,60,96,100,124,0,0,62,48,60,96,96,
96,0
7130 DATA 0,31,51,48,103,99,62,0,0,51,
51,51,126,102,102,0,0,63,12,12,24,24,1
26,0
7140 DATA 0,6,6,6,12,108,120,0,0,51,54
,60,120,108,102,0,0,24,48,48,96,102,12
6,0
7150 DATA 0,99,119,127,107,198,198,0,0
,51,59,59,110,110,102,0,0,30,51,51,102
,102,60,0
7160 DATA 0,63,51,54,124,96,96,0,0,30,
51,51,102,110,63,3,0,63,51,54,124,108,
102,0
7170 DATA 0,30,51,24,6,108,56,0,0,63,1
2,12,24,24,24,0,0,51,51,51,102,102,126
,0
7180 DATA 0,51,51,102,102,60,24,0,0,49
,51,107,127,118,102,0,0,51,51,30,60,10
2,102,0
7190 DATA 0,51,102,60,24,48,96,0,0,63,
6,12,56,96,124,0
7320 DATA 2,2,10,10,46,170,171,186,0,1
28,160,224,168,186,171,234
7330 DATA 2,2,10,11,42,186,174,234,0,1
28,128,160,160,232,174,234,170,174,235
,170,46,10,11,2
7340 DATA 174,234,171,226,160,128,128,
0,170,187,170,46,10,11,2,2,186,174,234
,162,128,128,128,0
7350 DATA 0,32,32,40,46,186,171,234,0,
8,8,44,42,187,234,174,174,234,170,184,
40,32,32,0
7360 DATA 186,174,234,184,40,32,32,0,1
28,128,224,160,160,232,184,170,174,234
,184,232,160,160,224,128
7370 DATA 186,232,160,160,168,232,168,
186,128,224,168,184,168,224,160,128,2,
10,2,11,42,46,171,186
7380 DATA 186,170,46,43,42,10,10,2,174
,170,46,42,11,10,46,170,2,11,10,42,46,
43,10,2
7390 DATA 0,168,168,168,0,138,138,138,
0,168,168,168,0,136,136,136,0,8,8,8,0,
10,10,10
7400 DATA 0,0,0,0,0,0,0,0,170,186,171,
170,186,170,238,170,170,171,186,170,17
4,234,174,170
```

Get it right!

LINE	CHSUM	LINE	CHSUM	LINE	CHSUM
10	18443	20	1940	40	1925
100	7071	110	7162	120	7132
130	7133	140	7086	150	5506
155	4360	160	6650	165	5739
170	5924	175	4227	185	3502
190	1608	200	8633	205	5396
210	3811	220	7054	222	7254
224	4913	226	4911	228	4915
240	6564	242	7659	244	4712
246	4159	248	4722	260	6832
262	7683	264	4742	266	4732
268	4909	290	1498	299	13154
300	9715	310	7666	315	15634
320	10145	330	10352	331	7469
332	9875	335	6381	350	1498
380	13129	385	10764	390	4012
399	4919	400	7048	499	4921
500	3051	520	11827	521	1304
524	4039	525	4148	526	4055
529	4047	530	1498	531	4138
534	4043	535	4153	536	4133
599	4923	600	11584	605	9274
610	9624	620	3900	630	4919
631	7558	635	9400	670	7248
671	7535	675	9717	680	12132
699	4925	700	11222	705	1322
710	6266	720	8890	725	6324
730	8270	740	8274	750	8275
760	8280	770	13290	780	10452
799	4927	800	7442	810	1345
820	1498	899	13525	900	3031
910	1501	920	9351	930	5978
950	6830	960	5512	999	7485
1000	5297	1010	13475	1020	5308
1021	4931	1022	5136	1023	4365
1040	5978	1050	4301	1060	5541
1065	4693	1070	1737	1080	6159
1085	19773	1090	10797	1095	10601
1100	17237	1110	12460	1120	5252
1121	3068	1122	3067	1123	3059
1124	3067	1125	3062	1126	3061
1127	3067	1128	3071	1129	3070

LINE	CHSUM	LINE	CHSUM	LINE	CHSUM
1130	3062	1131	3070	1132	3061
1133	3069	1134	3069	1135	3066
1136	5097	1140	14888	1150	14221
1160	18196	1170	10933	1171	11576
1172	14314	1173	14782	1180	3366
1181	3365	1182	3377	1183	3390
1184	3229	1185	3664	1186	3681
1187	3694	1188	3702	1189	3705
1190	17634	1191	8953	1195	1498
1200	1929	1210	11217	1220	6294
1230	4154	1235	14747	1240	1498
1250	15673	1260	1929	1270	5136
1290	1498	1299	9577	1300	15526
1305	10212	1310	2346	1320	17228
1330	2549	1340	17228	1350	12965
1360	6512	1370	11629	1380	1498
1390	14043	1400	1929	1410	11501
1420	10373	1430	10612	1490	1498
1999	10050	2000	4126	2001	2870
2002	2944	2003	3190	2004	2853
2005	2866	2006	2866	2007	2944
2008	2955	2009	5308	2010	2928
2011	3110	2012	2925	2013	2844
2014	2925	2015	2866	2016	3201
2017	2928	2018	2848	2019	2946
2020	2930	2021	4622	2022	5249
2023	5293	2024	2850	2025	2866
2026	4622	2027	2835	2028	3201
2029	2930	2030	2835	2031	2833
2032	2944	2033	4622	2034	2946
2035	2855	2036	2951	2037	2924
2038	5256	2039	3185	2040	2945
2041	2928	2042	2848	2043	2944
2044	3028	2045	2930	2046	2930
2047	2950	2048	2926	2049	2946
2050	2853	2051	2833	2052	2866
2053	2925	2054	2924	2055	2848
2056	2927	2057	2946	2058	2850
2059	2941	2060	2928	2061	2848
2062	2851	2063	2939	2064	2930
2065	3191	2066	3186	2067	5252
2068	2851	2069	4622	2070	2848
2071	2946	2072	3027	2073	3111

LINE	CHSUM	LINE	CHSUM	LINE	CHSUM
2074	2926	2075	2835	2076	3116
2077	2866	2078	2929	2079	2965
2080	2853	2081	2939	2082	5250
2083	2946	2084	3031	2085	5230
2086	2946	2087	3111	2088	2844
2089	3202	2090	5272	2091	5207
2092	2963	2093	2939	2094	5287
2095	4622	2096	2850	2097	2866
2098	2866	2099	4289	3000	6477
3010	11406	3020	6666	3030	2127
3040	13984	3060	4400	3070	923
5000	16845	5010	3485	5020	4447
5030	2287	5040	7568	5042	7973
5044	7977	5046	7960	5100	11153
5110	14352	5120	15420	5130	14536
5140	15820	5150	16041	5160	11442
5170	12242	5180	13683	5190	5513
5200	14593	5210	14633	5220	13829
5250	9469	5260	8593	5300	8648
5310	6366	5320	6345	5330	6191
5340	2136	5350	4533	5500	7836
5510	9357	5520	9989	5530	9552
5540	9141	5550	9402	5560	9361
5570	9372	5580	9338	5590	9093
5600	9727	5610	11004	5620	9910
5630	9872	5640	8398	5650	7677
5660	8380	5900	3831	6000	13229
5508	571	6010	6452	6020	7058
6030	1867	6100	9528	6110	5805
6120	4453	6130	8936	6140	6946
6150	4276	6190	1937	6200	10764
6205	4466	6210	2296	6220	7598
6230	8001	6240	8005	6245	8004
6250	2112	6900	1498	7000	8772
7010	11686	7020	10199	7050	7514
7060	10576	7070	10644	7080	7231
7110	11492	7120	11351	7130	11226
7140	11213	7150	12102	7160	11387
7170	10855	7180	11608	7190	7622
7320	9135	7330	12916	7340	13546
7350	12225	7360	14376	7370	13086
7380	11640	7390	12088	7400	12762

Prizes galore at the ATARI USER birthday party!

A complete Atari 130XE system

An Atari 1050 dual density disc drive

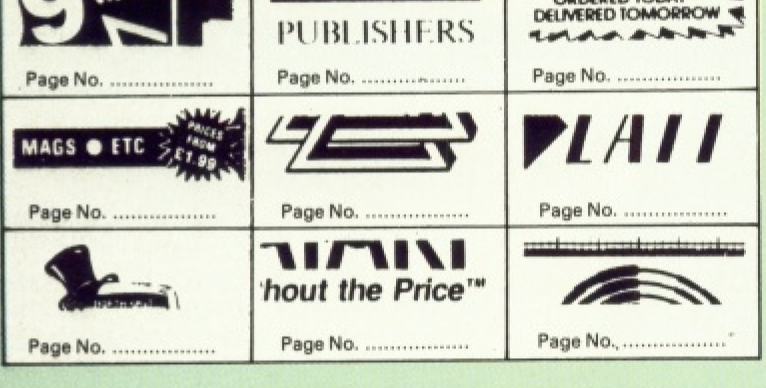
£1500 of assorted software from Software Express and SECS

5 copies of Flipside and Lands of Harvest from Microdeal, and Brataccus from Psygnosis

10 Ariolasoft T shirts and badges

Your FREE entry form

I consider that the nine cuttings from *Atari User* advertisements were taken from the following pages:



Page No.	Page No.	Page No. ....
Page No.	Page No.	Page No. ....
Page No.	Page No.	Page No. ....

I would like to see an article on:

____

____

____

____

The Atari machine I use is the:

____

Name ________________________________

Address ________________________________

____

POST TO: Birthday Contest, Atari User, 68 Chester Road, Hazel Grove, Stockport SK7 5NY.

This month sees the first birthday of *Atari User* – and to celebrate we're giving away a bumper collection of prizes worth more than £3,000 in our biggest, easiest-ever competition.

The prizes are amazing, covering the whole range of Atari products.

First prize is a complete 130XE system comprising an Atari 130XE, XC11 data recorder and joystick, courtesy of Atari, worth more than £170. And the second prize, also courtesy of Atari, is a disc drive.

It seems as if all the leading lights of the Atari world are helping us celebrate. Software Express is contributing more than £1,000 worth of assorted software and SECS a further £500 worth.

Not wishing to be outdone, US Gold has more goodies for Atari users in the form of 30 copies of its best-selling game Asylum.

And joining in the spirit, CDS has donated 10 Steve Davis Snooker games, Ariolasoft is giving away its fabulous T-shirts and badges and Silica Shop is providing software worth more than £100.

Yes, there's lots to win. And if all that weren't enough, Database Software is giving away 100 5¼in discs – that's 10 boxes – and 25 dust covers.

ST owners have not been left out either. Half the prizes from Software Express are for ST owners, and these include copies of Pascal and Ultima 2. Microdeal



has donated five copies of Lands of Havoc and five copies of Flipside.

Psygnosis has provided five copies of Brataccus together with two limited edition Roger Dean prints for each of the winners.

Kuma is giving away two copies of each of its K software: K-Spread, K-Seka, K-RAM, and the just released K-Comm.

The contest itself couldn't be easier to enter. We've taken pieces out of nine advertisements in this issue and put them in a numbered grid. All you have to do is find the page number of the original advertisement.

Now comes the bit where you use your brain. We'd like you to tell us, in not more than 25 words, what you'd like to read about in a future issue of *Atari User.*

Provided the page numbers are correct the most original, entertaining or useful suggestions will go into the hat for the great First Birthday Prize Draw. That's not too hard, is it?

We'd also like to know what type of Atari machine you use, so there's a space on the coupon for you to enter that information too.

So get to work and let us have your entry not later than May 31, 1986.

Remember there are lots of prizes. So everyone has a good chance of getting an *Atari User* first birthday present.

BASIC COMPILER

Part Three of the series by FRANK O'DWYER that helps you speed up your programs

YOU should now know how to compile any programs you write, so let's discuss Compiler Basic and what it is capable of. Rather than giving you a list of its keywords, along with explanations, I'll use Atari Basic as a starting point and explain how to translate it into Compiler Basic.

● LET

A convenient starting point is the LET statement. Like Atari Basic, this keyword is optional in Compiler Basic. There are, however, the following major differences between the two statements – variable names may be A to Z only, expressions may be integer only (0..65535) and expressions are evaluated left to right, without operator precedence.

Expressions are also different in the two Basics. The allowable operations are:

+ *for integer addition (no overflow check).*
– *for integer subtraction (no underflow check).*
* *for integer multiply (no overflow check).*
/ *for integer division (no divide by zero check).*
? *for integer remainder on division (no divide by zero check).*
| *for bitwise logical OR.*
& *for bitwise logical AND.*
^ *for bitwise logical Exclusive OR.*

If you don't understand the last three you can think of "bitwise and", and "bitwise or" as being just Atari Basic AND and OR respectively, and "bitwise exclusive or" you can probably live without. As well as these operations all the relational operators – greater than, less than, equal to and so on – are available as you would expect.

One thing to be wary of is the lack of operator precedence. Take the following statement for example:

LET X=3+2*4

This means two completely different things in Atari Basic and Compiler Basic. In Atari Basic X would get the value 11 since the multiplication would be done before the addition. In Compiler Basic X would get the value 20.

This occurs since the compiler does the operations strictly in the order they appear from left to right, in much the same way as a cheap calculator would. You can't use brackets to compensate for this either, since the compiler does not accept bracketing of expressions.

Don't worry though, there is always another way to write the assignment, perhaps using an intermediate variable, so that the operators are done in the order you want. The above example may be written:

LET X=2*4+3

This expression will come out the same in both Atari Basic and Compiler Basic.

In Atari Basic you can use functions such as ASC, PEEK and so on, in expressions. Although you can't use these functions in the same form in Compiler Basic, they are available to you.

Figure I shows a list of Atari Basic functions and their Compiler equivalents.

The compiler also has a facility to pass expressions to the assembler cartridge – but they must be constants not variables. The advantage of this facility is that the expression is evaluated by the assembler before the program is ever run, so that the expression is evaluated only once and does not slow down your program when it is running. Here is an example:

X=A+ [12*3+20]

This has the assembler work out what 12*3+20 actually equals (56) and substitutes it into the expression – so it is as if you had originally written:

X=A+56

This obviously will be quicker to work out than if you had omitted the square brackets, thus leaving the program to unnecessarily compute 12*3+20 each time this assignment

Atari basic	Compiler Basic	Purpose
PEEK(A)	A	Returns byte pointed to by A.
ASC("A")	'A	Gives ATAscii code of A, where A is a character.
PEEK(A)+256*PEEK(A+1)	A@	Returns 16 bit word pointed to by A.
ADR("string")	"string"	Returns address of literal string.
PRINT CHR$(A);	PRINT A	Prints character whose code is A.

In all the above, A may be an expression – so you can have the following assignments:

Example	Effect
X=88@	Assigns PEEK(88)+256*PEEK(89) to X
X=88	Assigns PEEK(88) to X
X=1+'A	Assigns ASC("A")+1 to X
X="hello"	Assigns ADR("hello") to X – this is a number not a string.
PRINT 1+2+43	Prints the character whose code is 46. Same as PRINT CHR$ (1+2+43); in Atari Basic.

Figure I

is encountered.

Well, that's just about it for expressions, and the LET statement.

Here are some other statements supported by the compiler:

● PRINT

PRINT is a simplified version of Atari Basic's PRINT command. As you have already seen, PRINTing an expression causes a character to be output, and not the value of the expression as you would expect. In fact there is no way to PRINT a number in Compiler Basic, except by writing a special subroutine which I will give you in a later article.

You can, however, PRINT a string. PRINT "hello" causes the expected output on the screen – except that the cursor does not move to a new line unless you issue a PRINT command on its own. In other words, PRINT "hello" in Compiler Basic is the same as Atari basic's PRINT "hello";.

● GOTO, GOSUB, RETURN

These work the same way in the compiler as in Atari Basic. You cannot GOTO an expression however, nor can you GOSUB an expression. You can however use labels, as in:

```
1000 LABEL LOOP ONE
1010 . . . . . .
1030 GOTO LOOP ONE
```

You can POP a return address in Compiler Basic – I don't recommend it though, since if you do it wrongly you can crash the computer, and will probably have to switch off and on, losing your program and data.

If you miss the facility to GOTO an expression, you can use the GOVIA keyword. This accepts an expression, but consider the command GOVIA 1000+10. It does not GOTO line 1010, but causes the machine language to jump to decimal address 1010. You can use this to implement a sort of USR call, or an ON . . . GOTO command. More about that in a later article.

● IF . . . THEN

IF . . . THEN is also available in Compiler Basic. Unlike Atari Basic you must finish with the ENDIF keyword. This allows the statements after the THEN to span several lines. For example:

```
1000 IF X=5 THEN G=1: D=D/4
1010 F=0: S=S+98
1020 ENDIF
```

In this example the four statements after the THEN keyword will be executed if X is equal to 5, otherwise the program skips to the statement after the ENDIF. Note that you must always finish IF statements with ENDIF, even if only one statement is to follow the THEN keyword.

I guarantee that most of your errors will be to do with omissions of ENDIFs. The compiler warns you if this occurs, so you should pick up the habit of using ENDIF quite quickly.

Figure II shows some examples of ENDIFs being left out and the correct way to write these statements is shown in Figure III.

● POSITION, SOUND SETCOLOUR

These are all available in the compiler. However, there is no check to see if the arguments are in range – so for example SOUND 100,50,10,8 would pass unnoticed by the compiler but might cause your program to crash – but you can use IF statements to check that the arguments are in range before executing the statements.

Don't worry about your program →

```
1000 IF X=5 THEN GOTO 2000
1000 IF X=5 THEN IF G=2 THEN GOTO 3000 ENDIF
```

Figure II

```
1000 IF X=5 THEN GOTO 2000 ENDIF
1000 IF X=5 THEN IF G=2 THEN GOTO 3000 ENDIF ENDIF
```

Figure III

running slowly if you do this – remember it is going to be compiled. Here is an example of using IF statements to trap out bad arguments:

```
1000 IF C>3 THEN GOTO
     ERROR ENDIF
1010 SOUND C,50,10,8
```

Here ERROR is some point in your program which you have labelled using the LABEL keyword (see the GOTO and GOSUB statements).

● DATA, READ, RESTORE

A crude DATA mechanism is provided in Compiler Basic. Each element in a data statement must be a number between 0 and 255, or an assembler expression. Here are some examples:

```
DATA 1,2,3,4,5,12+3
DATA "hello",155,0
DATA 'a,'z,23,45,67
```

In the case of a string ("hello" above) a data element is produced for each character in the string, so READing will first produce the ATAscii code for h, then for e, l, l, o in the case of our example.

Preceding a character with a single quote, as in 'a,'z causes the ATAscii code of that character to be READ from the data stream. Numbers and expressions (12+3, and so on) simply cause the appropriate value to be placed in the data stream.

RESTORE may be used to address a label or a line number. This line number or label must point directly to a DATA statement – the compiler will not scan for the first DATA statement in sequence as Atari Basic would.

DATA statements must be consecutive if READing is to work correctly, and DATA statements should be placed out of the path of the executing program, for example at the end of the program, or between subroutines or procedures or else the program will crash.

You can use REM statements in Compiler Basic programs. For example:

```
1000 REM INITIALISE:X=1:Y=1
```

● FOR . . . NEXT

These statements are available, albeit in a slightly corrupted form. In the FOR statement there is no initialisation part, so you write FOR X TO 200 rather than FOR X=1 TO 200. This means – FOR X counting in increments of one from its current value TO 200. In Atari Basic you would write FOR X=X TO 200.

If you want a loop which counts from 3 up to 1000, in Atari Basic you might write:

```
FOR N=3 TO 1000:NEXT N
```

To do this in Compiler Basic you would have to write:

```
N=3:FOR N TO 1000:NEXT N
```

It's a little strange, I'll grant you – but it simplifies the writing of the compiler.

There are no checks to see if your FOR . . . NEXT loops are properly nested, so be careful of statements like:

```
1000 FOR X TO 100
1010 Y=1:FOR Y TO 80
1020 NEXT X
1030 NEXT Y
```

which will not give an error message despite being incorrect. If you use proper indentation you should have no problem avoiding this situation.

● OPEN, CLOSE, GET, PUT,XIO

These are all the same in both Basics except XIO. Take XIO 17,#6,0,0,"S:" for example, which is the XIO command to draw a line in Atari Basic. In Compiler Basic you would have to change the two zeros to be the same numbers that you used when OPENing channel 6. Suppose you used OPEN #6,12,3,"S:" for example, then you should XIO 17,#6,12,3,"S:" as well.

The commands, as well as allowing the use of cassette, disc and keyboard devices from Compiler Basic also allow you to use colour graphics in your programs. You can replace Atari Basic's GRAPHICS, PLOT and DRAWTO commands using OPEN, CLOSE and PUT. LOCATE can be simulated using GET. All you have to do is OPEN channel 6 to the "S:" device. For example, OPEN #6,12,3,"S:" gives you Graphics 3 without a text window. Unfortunately space does not permit a full discussion of the possibilities of OPEN and XIO, but I may return to this subject later.

In Atari Basic you can TRAP errors. Similarly, in compiler Basic you can TRAP errors which arise when using OPEN, CLOSE, PUT, GET and XIO. For example, TRAP 2000 will cause control to transfer to line 2000 in your compiler program in the event of any error, say while GETting characters from cassette. To turn off the Trap use TRAP OFF. To turn it back on use TRAP ON.

To examine the cause of the error you can use variable S. This is updated after every OPEN, CLOSE, GET, PUT and XIO command. In the event of an error S will contain the error code.

So if S equals 141, ERROR 141 has occurred (Error 141 being cursor out of range – see the Basic manual for a full list of error codes) – by the way, S is short for status variable.

As in Atari Basic you can POKE a byte to any address in memory. Compiler Basic also provides DOKE, short for double POKE. This POKEs a 16 bit number (0-65535) to an address in memory in low byte/high byte format.

To load the screen memory address register at location 88, for example, you might use DOKE 88,w – where W is the number to be DOKEd. To do the same thing in Atari Basic you have to resort to something like POKE 89,INT(W/256): POKE 88,W-256*PEEK(88).

If you examine the games listings in magazines and books you will see that constructs similar to this occur frequently. For this reason, DOKE is an extremely neat and useful command.

● *That's the end of the statements Compiler Basic and Atari Basic have in common. Next month I will discuss the keywords that are peculiar to Compiler Basic – these include keywords to handle timed interrupts and local variables, so stay tuned.*

MicroLink in association with TELECOM GOLD

No. 9 May 1984

NEWSLETTER

MicroLink slashes the cost of Telemessages

OLD-fashioned telegrams have been projected into the Electronics Age – in the form of Telemessages. The difference is that today you compose the message on your micro, transmit it over a phone line via MicroLink, and it is delivered by the postman the following morning, neatly presented in a distinctive, eye-catching yellow envelope that just demands attention!

The Telemessage service was originally introduced so that people could phone their message to the operator. You can still do this, but it costs £4 for up to 50 words.

Now, using your computer and MicroLink, it only costs £1.45 for up to 350 words! Which is sufficient for an average business letter – and a small price to pay if it means you beat the opposition to clinch that all-important contract.

What's more, for an extra 65p your message can be delivered inside an attractive greetings card.

So if you've almost forgotten your loved one's birthday, or it's too late to buy a card – or you've simply missed the last post – Telemessages can be a real godsend.

To ensure delivery by first post the following morning you have to send your message before 8pm. It is instantly transmitted, exactly in the form you keyed it in, via the MicroLink mainframe in London direct to the postal delivery office nearest the recipient's address.

There it is printed out, put into the special envelope, and passed on to the local postman for delivery.

It's as simple as that!

Until now you could only send electronic mail if your recipient also had a computer. Now you can send a Telemessage to any address in the UK – all 22 million of them. (And there is also a next-day service for any of the 90 million homes in the USA.)

What it costs to send a Telemessage:

	By phone	*By MicroLink*
Up to 50 words	£4.00	£1.45
Up to 100 words	£6.25	
Up to 150 words	£8.50	
Up to 200 words	£10.75	
Up to 250 words	£13.00	
Up to 300 words	£15.25	
Up to 350 words	£17.50	

YOUR chance to join MicroLink – Page 35

Takeover boosts e-mail service

BRITISH Telecom's takeover of Dialcom, the world's largest electronic mail service, has been welcomed by Derek Meakin, head of MicroLink.

"Dialcom has a head start over all the other companies engaged in electronic mail on a global scale and is in the best position to take advantage of the dramatic increase in international messaging that is now under way", he says.

"MicroLink will be able to benefit in many ways from the revitalised Dialcom that will result from BT's involvement.

"We can expect many technical developments that will considerably enhance the service we offer our subscribers".

Dialcom has been sold to BT by ITT, the US conglomerate, which has recently been divesting itself of a number of its subsidiaries.

Last year it had an income of $19 million from its 100,000 mailboxes in the USA and from the fees it charges its licencees, the largest of which is the UK's Telecom Gold, of which MicroLink forms part.

But its growing revenue still wasn't sufficient to stop Dialcom running up heavy losses.

BT is putting in its own management and expects Dialcom to be back in profit by 1988.

In addition to the USA and UK, other countries on the Dialcom network are Australia, Canada, Denmark, West Germany, Hong Kong, Ireland, Israel, Korea, Netherlands, New Zealand, Puerto Rico and Singapore.

Subscribers in all these countries can have instant communication with each other by electronic mail, in addition to other messaging services such as telex and telemessages.

Dutch delight..

DUTCH subscriber J.W. Bangert says MicroLink is the most painless way to communicate with friends and colleagues all over the world – and he should know because he's a dentist.

When he isn't filling or pulling teeth at his surgery in Spanbroek he can often be found at the keyboard of his micro.

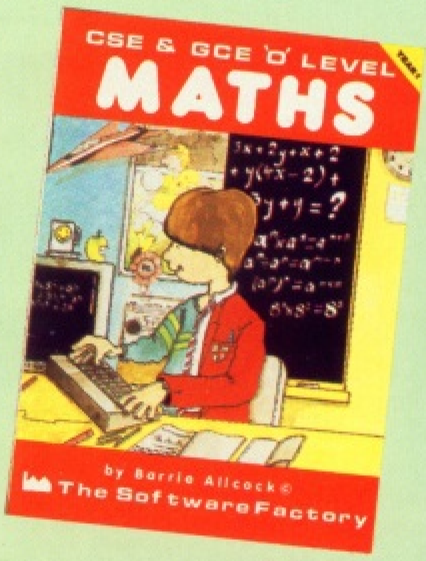
"I use the fabulous MicroLink to communicate – that's what computers are made for", he says.

"As a dentist who is interested in computers I find the system is a good way to send letters to the USA and England very quickly.

"It also makes it easier to get answers to my questions about computing – it is sometimes very difficult to get computer information in Holland, as we are not so much into these things as you are in Britain.

"I have a lot of friends in England who I often surprise with a nice card on the Telemessage service and I'm also able to send fast messages to professional magazines and organisations like the Dental Association in America".

Sterile approach to maths studies



THE Software Factory has produced a series of five discs called **CSE and GCE O Level Maths** to match the five years the children would study mathematics in a senior school.

Although referred to as a course, they are at best a simple aid to learning, and at worst just a series of mathematics tests.

The authors say the programs are designed to assist those studying CSE and O level mathematics and that using them will increase the pupil's abilities in mathematics.

Yet the first four discs merely offer tests where they are marked and timed and the help pages offer little more than a traditional textbook would.

The questions are difficult, there appears to be no common thread and the pupil can get the correct answer by entering incorrect inputs.

Failure results in an explanation, but even this is inadequate if understanding is to arise.

The language used is difficult to understand, for example: "A number in standard form is a number expressed as a number between 1 and 10 multiplied by a power of 10".

Disc 5 amounts to a test of tests. It is the revision section and as a reflection of the efficiency of the course you are given three attempts to get the correct answer instead of two.

Success at this level would guarantee a pass at O level as the pupil would have to be well above O level standard to understand the questions – and some of the explanations.

There is a market both in school and at home for revision software, but for it to be of real value it needs to be sound in its subject content and to take into account how the child learns.

The traditional approach of this software might be acceptable for the grammar school where it would be backed up with teaching and an in-depth explanation.

But the course is no use for pupils who wish to teach themselves. Even if the computer is used to the full it still requires a skilled teacher to enable the average and above average child to learn from this package, and a skilled teacher would find little in this software to excite them.

The computer has no screen graphics to speak of and little interaction and the documentation is limited.

Children using the programs felt demoralised by them and showed little motivation – an unusual state considering they were using the computer.

With exciting software available to help the pupil develop an investigatory approach to mathematics there is little room in school for such sterile software.

Although it could provide a revision aid for a bright child who had already attained the required standard, it does not provide the careful explanation that most children need.

I suspect that the children who would most benefit from this set of programs will already enjoy using textbooks anyway.

Alan Coode

Spying isn't easy, but

IF you're a fan of Mad magazine you will undoubtedly know about the Spy vs Spy comic strip. For those of you who don't, the stories follow a deadly duel between two opposing spies, one dressed in black and the other in white.

After the success of the first Spy vs Spy computer game the spies have now returned to continue battle in **Spy vs Spy II: The Island Caper.**

The game boots up with an attractive title page. After a short pause a plane flies past shooting holes in the titles, then another follows in to destroy more of the picture. The pilots are the spies and, after wrecking the screen they fly off and the display changes to the main screen.

A big selling point with the Spy vs Spy games is the way in which they display the action. Star Software has designed a screen with two monitors connected to a main computer via ribbon cables.

The two monitors show the position of the spies – this is called simulvision. They also update in real time, and this is called simulplay. A monitor will display a 3D view of the landscape and you can move your spy away to the distance, towards you and left and right.

Moving to the edge of the screen forces more landscape to scroll on, and little gaps at the top and bottom of some screens allow access to the north and south of the island.

The object is to recover all three parts of a top secret missile. In the Mad fashion this missile is not an Exocet or a Polaris, but an XJ4 1/4.

It has crashlanded on Spy Island and broken up into the three parts that you must retrieve and assemble. The island has only one resident, an active volcano which is about to erupt, so quick completion of your mission is essential.

The spies have been equipped with the latest spy technology, the Trapulator Model FSS 85. This technological gadget aids you in your fight for the missile. It shows what you have in your inventory and also allows you to access the equipment that you have acquired.

You have a good selection of devious weapons with which to trap or attack your foe – from napalm to a coconut gasoline bomb. You can also dig holes and put sharp sticks down them. This has a nasty effect on any spy unlucky enough to fall into a pit.

My favourite is the rope snare. You select the rope from the trapulator and climb up a tree tying one end to the tree top, you then stretch the other end to the ground.

Once the snare is set it becomes invisible, so you must remember where you set it.

If a spy triggers off the snare he will be lifted in to the air and left dangling from the tree.

All of the traps deplete your strength and delay you for a few seconds, giving the other spy time to do more dirty work.

If you want spy to spy combat then you must confront your enemy. When a spy enters the same area as his opponent the simulvision ends and all attention is switched to just one monitor.

You are also unable to

Hit a trifle below the belt



IN Gremlin Graphics' **King of the Ring** you are the manager of a boxer. It's your task to guide your fighter through four fights before taking on the world champion. You must use skill to select the correct training strategy and tactics to guide your boxer to victory.

That's what the cassette inlay said, but all I found in this game were two jerky page flipped boxers and lots of laborious typing.

The game starts off with a list of 20 opponents from which you pick a contest – if the opponent you choose is considered too high grade you try again.

After that you are given a screen of information on your opponent ranging from his age to his fight record. You should be able to get an idea of what sort of fighter he is from this.

Next you train for the fight by choosing four out of the following six routines – sparring, punch bag, weights, gym work, footwork and road work. Each is supposed to develop you in a different way, for example road work increases stamina and weights will improve punching power.

After assessing your training you choose a strategy from another list. You have four set fight strategies. Once one is picked then it's on to another list, this time awarding priority points for the way you fight each round. Options available are footwork, infighting, attack and defence. The more points awarded for an option, the more effort is put into that choice.

By now my fingers were developing cramp and I was wondering if I was ever going to fight. But the bell sounded and I got a chance to watch my boxer's progress. At this point you have the excitement of watching the other boxer belt the living daylights out of you while amassing a large punch count.

This goes on until you either win or lose and then it's back to the start for a new opponent. Four wins and you fight the World Champion who generally pulverises you.

After playing the game for more than three hours I lost interest. It seems to lack action and strategy, as you only have limited set choices.

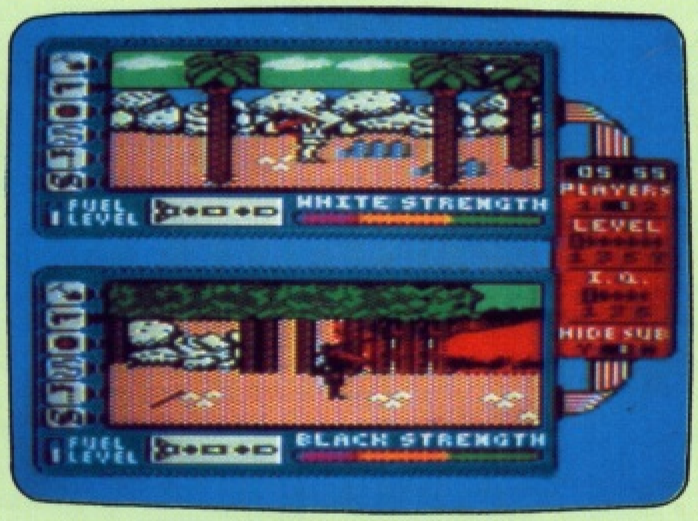
There is sparse use of sound and graphics. The fighters themselves are outlines which are well drawn but badly animated.

This is one of Gremlin Graphics' first releases for the Atari but it is well known for its quality games on other micros. So let's call this a start and hope they work their way up.

Not the best of games but it will please some people – but look before you buy, otherwise you may feel you have been hit below the belt.

Paul Irvine

it certainly can be fun



access your trapulator while in combat range. You have two methods of attacking an enemy spy. You can either jab your opponent with a sword that appears when you enter combat mode, or smash him over the head with the sword.

There are also natural hazards you need to look out for. The island has small areas of quicksand, which when stepped in can be hard to escape from.

The sea looks nice for a quick dip but if you wander into deep waters you find that spies are poor swimmers and you will soon drown.

In these parts the sea is infested with hungry green-gilled mud sharks with an appetite for spies. The only need for venturing out to sea is for a player who has assembled the missile to find his off-shore submarine which will take him home.

The spy who achieves his goal first gets onto the submarine and a girl pops out of the hatch to give her hero a small kiss on the cheek. Finally, they both jump into the sub and dive deep James Bond style. Altogether I found Island Caper a great game especially in the two player mode, but the computer is very hard to beat.

To overcome this problem I just changed the computer's IQ level.

One pleasing feature was that the program could be played via the keyboard as well as joystick. You also have control over which level you wish to play. On two of the levels there are two islands, making the game longer and much more fun.

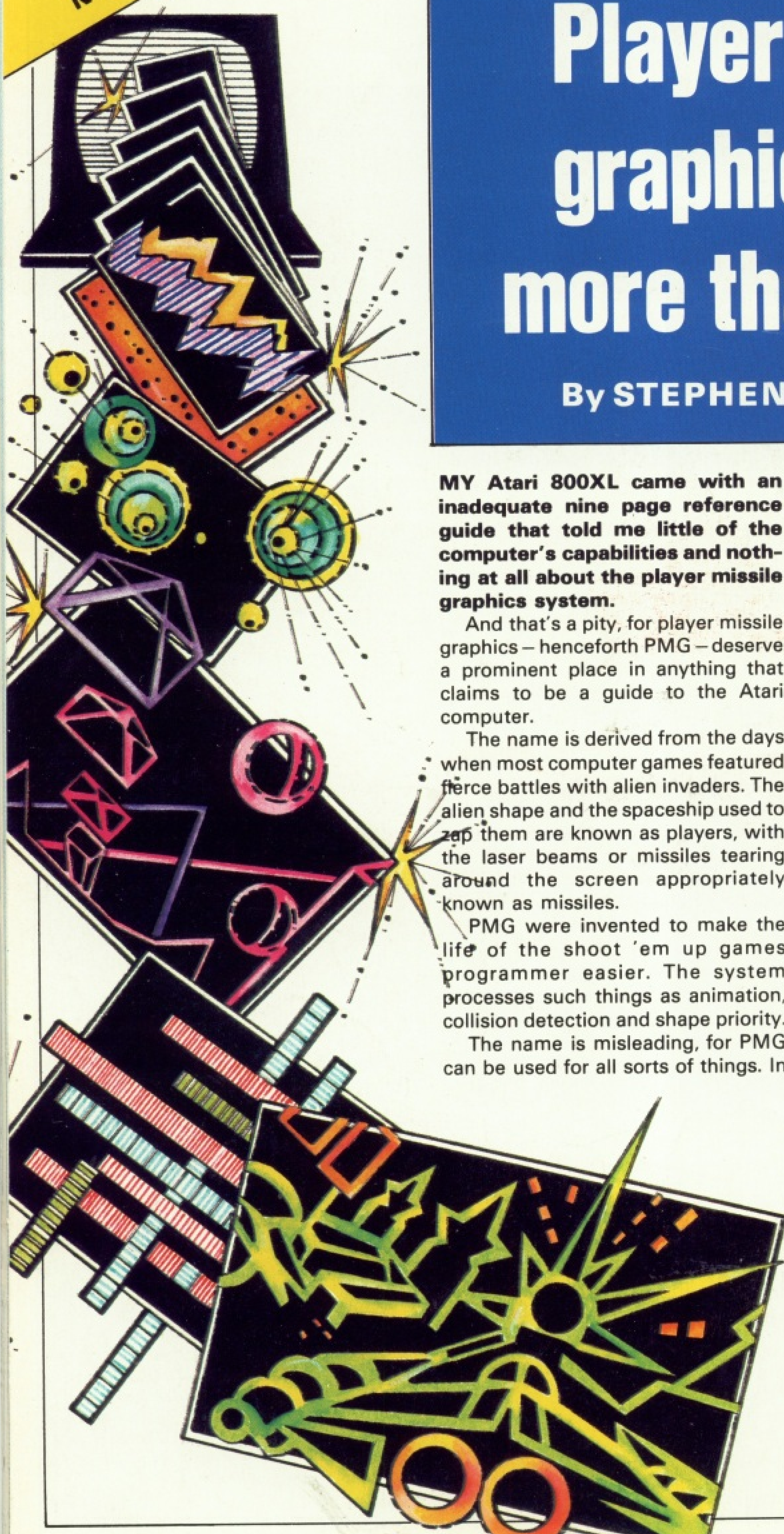
The only disappointment was one small bug which I found. I somehow managed to get a screen where a tree had been split in half and all the perspective went wrong – this only happened once in many hours of game playing, so it wasn't too bad.

Spy vs Spy II, is a well presented and complete game. It is slightly difficult for younger players to get to grips with but great value for money.

Disc price is £14.95, cassette £9.95 and you need a minimum of 48k RAM.

Richard Vanner

START OF A NEW SERIES



Player missile graphics offer more than lasers

By STEPHEN WILLIAMSON

MY Atari 800XL came with an inadequate nine page reference guide that told me little of the computer's capabilities and nothing at all about the player missile graphics system.

And that's a pity, for player missile graphics – henceforth PMG – deserve a prominent place in anything that claims to be a guide to the Atari computer.

The name is derived from the days when most computer games featured fierce battles with alien invaders. The alien shape and the spaceship used to zap them are known as players, with the laser beams or missiles tearing around the screen appropriately known as missiles.

PMG were invented to make the life of the shoot 'em up games programmer easier. The system processes such things as animation, collision detection and shape priority.

The name is misleading, for PMG can be used for all sorts of things. In some Atari graphic art programs the system is used to draw and move a crosshair pointer across the screen that does not erase any shape that it passes over.

It can also be used to display graphs or charts in more business orientated programs.

Other computers, such as the Commodore 64, have similar graphic systems, but generally these are known by the updated and I think better name of Sprites.

Inside Atari 8 bit computers – these include the 400, 800, XL and XE series – are two microchips called Antic and GTIA which are separate microprocessors dedicated to handling screen displays.

If you followed Mike Rowe's series in last year's *Atari User* you will have seen how, by using display list interrupt techniques, Antic and GTIA can be accessed to produce spectacular multicoloured effects. These chips also process the player missile system.

The Antic chip receives data from a program which is processed using Antic's own built-in programs and then the relevant information is passed on to the GTIA chip which takes care of putting the display on to the TV screen.

Unfortunately Atari has not seen fit to support player missile graphics with any Basic commands. There are some extended Basic programs that add extra commands which can be used to control the system, for example Basic XL reviewed in the December 1985 issue of *Atari User.*

Without the advantage of extended Basic you must resign

yourself to lots of POKE statements if you wish to use player missiles in Basic programs.

This can be complex, but the effort required to understand the system is well worth it. Incorporating PMG can add a touch of class to a Basic program.

This month's program demonstrates some aspects of the system and illustrates how some of the jargon associated with PMG is employed.

The first part shows the screen area on which text and graphics can be displayed. This screen display area is called Playfield 0. The border around the display area is known as the background.

Anything appearing on the top of Playfield 0 that is not a player or a missile is Playfield 1, Playfield 2 or Playfield 3. These playfields are created by plotting points using the PLOT or DRAW commands or by directly POKEing into the screen memory area.

When you use COLOR 1 and DRAW or PLOT on to a graphics screen you are plotting Playfield 1, with Playfields 2 and 3 plotted by using COLOR 2 and COLOR 3.

PMG supports up to four playfields (0 to 3). Computers insist on counting from 0, unlike humans who prefer to start at 1, so Playfield 1 is actually the second playfield – confusing isn't it?

In the demonstration we are using Graphics Mode 5, a four colour mode which consists of a 40 row by 80 column graphics display area on which pixels may be plotted, and a four line text window at the bottom of the screen on which the text appears.

For the purposes of PMG the text window is also part of Playfield 0. It follows from this that the text that appears on this window is also a Playfield – Playfield 2 in this program.

Lines 180 and 190 draw a line around the edge of Playfield 0 to outline the dimensions of the Playfield 0. This line is drawn in COLOR 3 and is therefore Playfield 3.

In lines 220 and 230 a rectangle is drawn on Playfield 0 in COLOR 2 to become Playfield 2, with Playfield 1 drawn inside the rectangle in COLOR 1.

The next part of the program shows what is meant by a player stripe. If you look closely at any of the standard Atari characters that appear in the text window when you run this program, you will see that they are made up of a series of small dots known as pixels (short for picture elements). This is more noticeable on large screen televisions than small portables.

Each character is designed on an 8 × 8 grid which means that a character can be a maximum of 8 pixels wide and 8 pixels high.

A player is a shape made up of pixels in a similar manner – but instead of using an 8 × 8 grid, the player missile system uses either a 8 × 256 grid or an 8 × 128 grid.

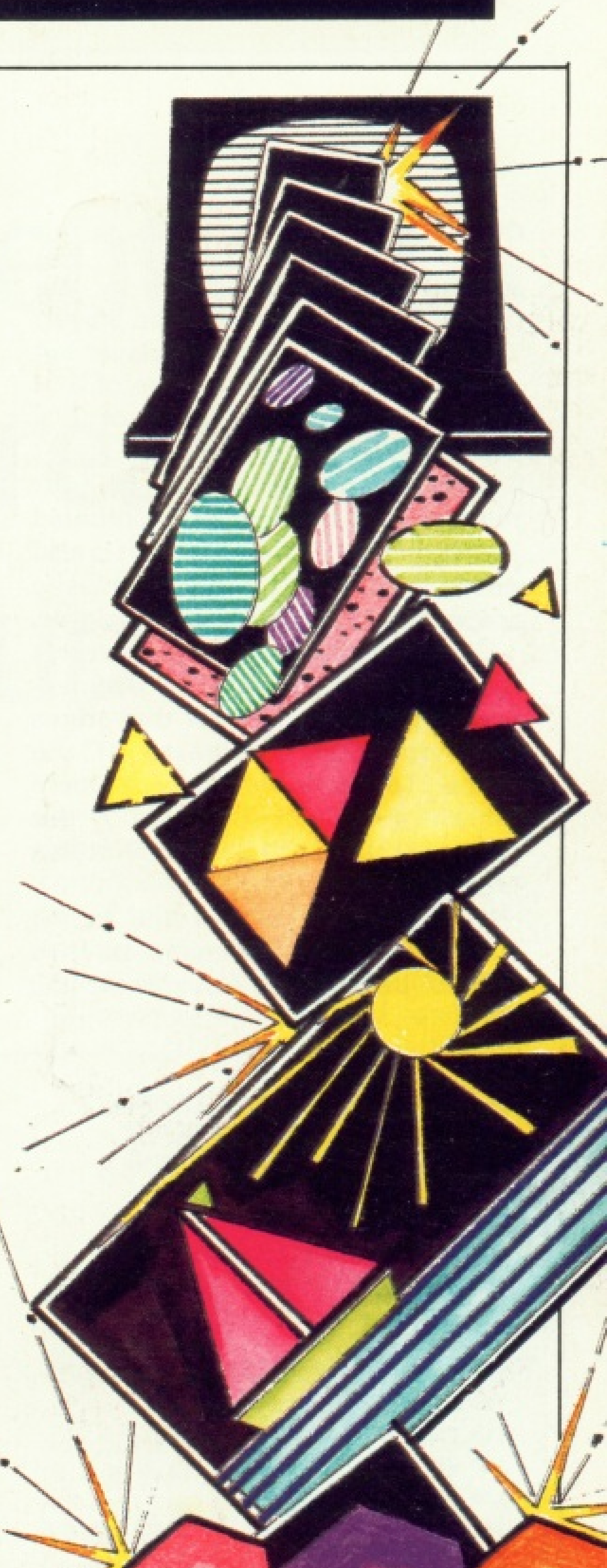
The 8 × 256 grid is used for single resolution players, the other for double resolution players which take up less memory space but are much chunkier looking and made up of larger pixels than the single resolution players.

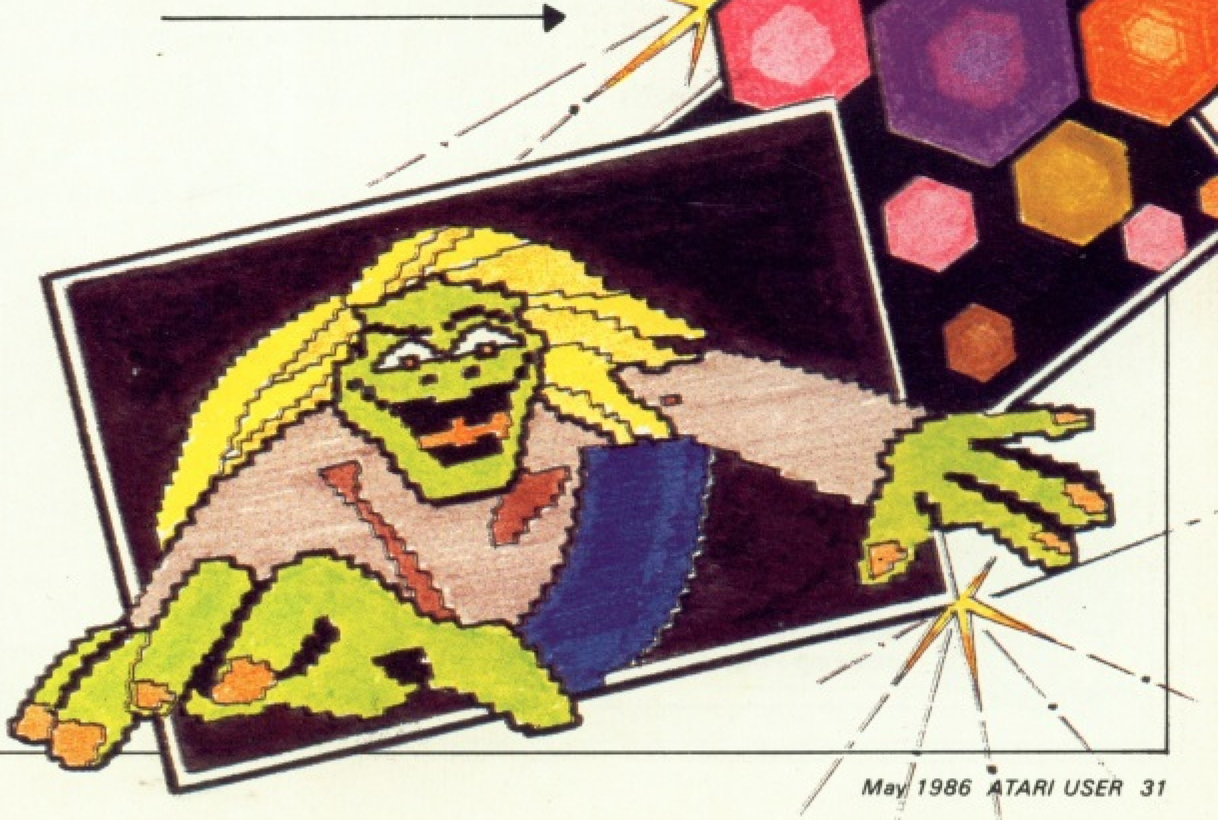
The demonstration program lights up all the pixels within a player stripe area to form a ribbon of colour that stretches from the top of the screen to the bottom.

While all playfields must be plotted within the Playfield 0 area, shapes plotted within the player stripe can leave the playfield area and travel over the border at the top and bottom.

By altering the horizontal position of the player stripe, players can also reach the border area at the left and right hand edges of the screen.

In most applications only a few pixels within the player stripe are switched on, and the next part of the program shows the shape of a bug when selected pixels are plotted. This shape is known as a player which is plotted within the area of the player





stripe. The player shown by the program is a single resolution player.

A missile is similar to a player but uses a much narrower stripe of 2 × 256 single resolution pixels or 2 × 128 double resolution pixels.

PMG can control up to four missiles and four players numbered like the playfields from 0 to 3. It is also possible to place all four missile stripes together to form a fifth player.

To make it appear as if the player is moving horizontally is fairly simple – you just adjust a register that stores the horizontal coordinate of the stripe. To move vertically is more difficult and is not illustrated by this program, but it will be looked at in a later article.

The program moves the player from left to right. The animation is so smooth because the player is moving a very short distance at a time – equal to the width of one pixel.

When the player touches Playfield 2 – the rectangle – a sound effect is switched on. This is done through a process called collision detection.

We can find out from Antic when a player or missile has touched another player, missile or playfield. This program checks to see if the player has collided with a playfield then jumps to a sound effect routine. As the player leaves Playfield 2 the sound effect is switched off.

When moving from left to right the player appears to travel over the playfields, but when travelling from right to left it passes under the playfields.

The portion of the player beneath the bars cannot be seen, but the section of the player between them is visible – this is an example of shape priority, and enables us to decide which players or playfields are on top and which underneath.

At this point I will not go into how the program works, but it is there to show you something of the player missile system's capabilities. If you examine the program you will get a flavour of what is required to operate PMG.

● *In future articles I will analyse how to initialise the system, the designing of players, animation, collision detection, changing the size of players and shape priority, as well as other matters involved in player missile graphics.*

All these elements will eventually be combined in a game starring the bug that has made its first appearance in this month's program.

```
10 REM  PLAYER MISSILE GRAPHICS
20 REM  By Stephen Williamson
30 REM  FOR ATARI USER
40 REM  PART ONE-PROGRAM I
50 GRAPHICS 5
60 SETCOLOR 0,3,4:SETCOLOR 1,5,14
70 SETCOLOR 2,2,0:POKE 712,34
80 POKE 764,255:KEY=0:SOUND 0,0,0,0:VO
L=0
90 POKE 559,62:POKE 623,0
100 POKE 53248,194:POKE 53278,0
110 POKE 704,204:POKE 53256,2
120 PMB=PEEK(106)-16
130 PMBASE=PMB*256+1024
140 FOR X=0 TO 255:POKE PMBASE+X,0:NEX
T X
150 POKE 54279,PMB:POKE 82,0:? CHR$(12
5)
160 ? "        ATARI PLAYER MISSILE GRAP
HICS   "
170 ? "               DEMONSTRATION
       ":GOSUB 470
180 COLOR 3:PLOT 0,0:DRAWTO 79,0
190 DRAWTO 79,39:PLOT 0,39:DRAWTO 0,0
200 ? CHR$(125);"The display area of t
he screen is calledPLAYFIELD 0":GOSUB
470
210 ? CHR$(125);"Anything drawn on  PL
AYFIELD 0 which     is not a PLAYER or
MISSILE is PLAYFIELD 1 to 3"
220 COLOR 2:PLOT 12,16:DRAWTO 67,16:DR
AWTO 67,30:DRAWTO 12,30:DRAWTO 12,16
230 COLOR 1:FOR Y=18 TO 28 STEP 2:PLOT
 16,Y:DRAWTO 64,Y:NEXT Y
240 GOSUB 470
250 ? CHR$(125);"This is a PLAYER stri
pe"
260 POKE 53277,3
270 FOR X=0 TO 255:POKE PMBASE+X,255:N
EXT X
280 ? "with all the pixels switched on
."
290 GOSUB 470
300 ? CHR$(125)
310 POSITION 2,4:? "Switching on selec
ted pixels"
320 FOR X=0 TO 255:POKE PMBASE+X,0:NEX
T X
330 ? "creates a PLAYER shape."
340 FOR X=0 TO 10:READ A:POKE PMBASE+X
+120,A:NEXT X
350 GOSUB 470
360 ? CHR$(125);"The PLAYER can be mov
ed "
370 ? "over the PLAYFIELD,"
380 FOR X=194 TO 60 STEP -1:POKE 53248
,X
390 GOSUB 530
400 NEXT X
410 POKE 623,4
420 ? "or under the PLAYFIELD."
430 FOR X=60 TO 194:POKE 53248,X
440 GOSUB 530
450 NEXT X
460 ? CHR$(125);"To run demonstration
again -":GOSUB 470:RUN
470 POKE 755,2:? "             Press a
ny key";:REM 12 SPACES
480 POKE 764,255
490 KEY=PEEK(764)
500 IF KEY=255 THEN 490
510 KEY=0:POKE 764,255:POKE 755,0
520 RETURN
530 VOL=0:POKE 53278,0
540 IF PEEK(53252)>0 THEN VOL=0
550 IF PEEK(53252)<>0 THEN VOL=14
560 SOUND 0,X,14,VOL
570 RETURN
580 DATA 40,146,214,254,238,254,238,18
6,170,56,16
```



Tired of typing?

Take advantage of our finger-saving offer on Page 48.

Get it right!

LINE	CHSUM	LINE	CHSUM	LINE	CHSUM
10	14906	20	16046	30	13786
40	14153	50	2044	60	5584
70	4700	80	7008	90	3920
100	4758	110	4347	120	2770
130	3648	140	7129	150	6439
160	20926	170	21202	180	5343
190	6300	200	17342	210	21632
220	13080	230	11453	240	1914
250	7946	260	2136	270	7605
280	9635	290	1914	300	1737
310	11487	320	7129	330	6435
340	8837	350	1914	360	7810
370	4987	380	6296	390	1901
400	1375	410	1840	420	6223
430	4933	440	1901	450	1375
460	13003	470	15717	480	2121
490	2458	500	3554	510	5359
520	1498	530	3382	540	4840
550	5236	560	3192	570	1498
580	7010				



The adventurer's world is really looking up now

By Brillig

I SPENT some time at the Atari Show in the Champagne Suite at the Novotel, Hammersmith. Apart from the fact that the show was an absolute smash hit from everybody's point of view, there were some exciting developments in the world of adventure.

The show was the first opportunity for everyone to see what sort of support the ST was going to get. So far Talent was the only software house fresh to the scene, although the Infocom range was there almost as soon as the ST.

Now comes The Pawn from Rainbird Software. Quite honestly this adventure features the best graphics I have even seen in an adventure on any machine. They are absolutely brilliant – and this from a confirmed graphics-hater. If you have an ST I urge you to rush out and see for yourself. I only wish I had one.

As it is, I shall have to wait for the 8 bit version, which should retain the graphics but in a somewhat different form.

Also at the show our old friends Level 9 (even if the friendship seems to be a little strained of late) showed the preview of The Prince of Magyck which I am sure I have spelt wrong. This is the first of the games they will be releasing for the ST although the rest of their range are to follow.

The version they were showing was far from complete, as you could do little more than move around. The notice above the game did say that the authors knew there were bugs in it, so hold on all you glitch hunters.

Obviously it is too soon to try to review either product but in comparison with The Pawn the Level 9 graphics came a poor second. I feel that their ST graphics are the same as will appear in the 8 bit version, and hence could only be disappointing on a machine like the ST.

When you consider the power of packages such as Degas for the creation of artwork on the ST, 8 bit graphics are really not good enough.

Glitches of the Month:

IT is hats off to Gavin Jones, winner of this month's T shirt for, wait for it, TWO Infocom bugs.

In fact they are similar bugs in the parser routine but I am determined to have an Infocom Glitch, so with apologies to the typesetters here goes.

In Zork II, type in TASTE MGCKJK (don't ask me why he typed it) to receive the helpful prompt of "I don't think the gdxr syilc xwuhljoykpekkrghas smj would agree with you".

Not so much a bug as a complete Vogon dictionary, speaking of which, if you type EXAMINE ZZMGCK in HHGTG the computer says "How can you read a jujctw?" How indeed?

Gavin reveals he is the possessor of Zorktools for his IBM which also allowed him to list out the complete vocabulary of HHGTG – all 900 words plus.

Now can anyone tell me the use of the words 'wimbgu' and 'woonbe' in the game? A bonus T-shirt to be won for the best answer.



The rest of the Level 9 range do not all have graphics and should convert admirably to the ST. As yet there is no indication of prices.

The last of the Atari Show adventurers were Bignose Software, who exhibited on the SECS stand their new adventure Qa!

In the game you play the stranded member of an expedition to find the fabled mask of the Sungod Qa. You have to rescue the only other survivor from the local tribesmen before they manage to sacrifice her to their god, as she is the only person who can radio the supply ship for help.

The game has more than a touch of the Indiana Jones about it, and the clock which ticks off the minutes as you try to penetrate the jungle to rescue Kate Mellender makes the action all the more tense.

A good deal of care is required at the start to survive to reach the first major obstacle, a crocodile-infested river. If tough logical problems with a real sense of escapism are what you seek then this is for you.

Jon Dean of SECS also explained that the licensing deal his company has with Bignose allows the games to come out at budget prices. The Pay-Off and Opera House are combined on cassette at £4.99, Qa! is alone at £2.99 on cassette, but is combined with Opera House on disc (Atari has the disc rights to The Pay-Off) at £6.99. Amazing value.

In a sense the show captured the new directions adventure software is taking with regard to price. Certainly the budget games that SECS had on display were selling well, and yet there is still a huge market for the Infocom and Pawn style of game. These are the Rolls Royces of the adventure market and deserve their premium price.

To round off, Andrew Dalglish wants to know how to get past the guard dog in The Pay-Off. As the dog is hungry why not give it a feed, Andrew, but do something to the meat first to make sure he wants a post prandial nap.

Once the dog has stopped foaming at the mouth that should give you some ideas about how to stop the alarm.

Happy adventuring.

MicroLink



What it offers the Atari user . . .

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Telemessages: £1.25 for up to 350 words.
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"Match of the Day" replay for Horse Play

A NEW feature can be added to the excellent Horse Play from the March issue by entering the lines on the right.

They enable moves to be replayed instantly – just like Match of the Day.

An array keeps track of the X,Y values. These are then used to reprint the black squares – see line 3020.

After the replay there's a short pause before the program returns to the end screen. – **P.R. Dean, Wallington, Surrey.**

```
135 DIM A(128)
205 Q=0
335 IF T=1 THEN RETURN
945 A(Q)=X:Q=Q+1:A(Q)=Y
1120 POSITION 2,11:? #6;"MENU=M  REPLa
Y=A"
1135 IF PEEK(764)=63 THEN 3000
1175 A(Q)=X:Q=Q+1:A(Q)=Y:Q=Q+1
2115 Q=0
3000 T=1:GOSUB 220:T=0:POKE 764,0
3010 COUNT=0:FOR R=0 TO Q STEP 2
3020 COLOR 2:FOR I=10 TO 1 STEP -1:PLO
T A(R)+1,A(R+1)-I:DRAWTO A(R)+10,A(R+1
)-I:NEXT I
3030 FOR I=1 TO 50:NEXT I
3040 GOSUB 1180:NEXT R
3050 FOR I=1 TO 500:NEXT I:GOTO 1000
```

Cost of expansion

IN reply to G.T. of York about expanding his 600XL, the RAM pack he is after cost £89.99. The cost of a new 800XL is only £40 more.

How does Atari account for this? If they can cut 50 per cent off the 800XL then please do this with the RAM pack.

Friendly Jack has cut the cost only on the computers that did not sell. The reason that they did not sell was that the add-ons were over priced.

If Atari can price their goods more reasonably they might sell a few more computers.

Atari has left all 600XL owners with a computer that costs too much to expand. – **T.J. Keane, Beaconsfield.**

Attack that fails

HAVING recently bought an Atari 800XL, I started buying the Atari User.

I thought I would have a go at typing in the Alien Attack game by S. Williamson from the January Atari User.

I listed it out and double checked. When I run the game I keep getting Error at line 30, which is a data loading error.

Could you please let me know if there has been a printer's error on this game or can you tell me why I keep getting this error? – **M. Lappage, Dagenham, Essex.**

● You've made a typing error – not in line 30, but probably somewhere in the DATA in lines 190-920.

Seeking an arrow

I RECENTLY bought an 800XL computer and was typing your Bridge game when I came across a character of which I couldn't figure out how to print.

It was in line 5000 and on 5010, ";"   ";"   ";"   "; the problem was I couldn't print the arrow. – **Nigel Strutt, Boreham Wood, Herts.**

● The left-facing arrow is achieved with ESC CTRL +. See page 51 of our December 1985 issue for a complete list of those elusive special characters.

Well bugged ST basic

I BOUGHT my Atari 520ST in October 1985 and it may well be a wonderful machine. But how can I tell?

I was promised that a Pascal compiler was ready and sent off my money in October. The latest word is that I will get it this month, but I've given up hoping. It is all too disappointing.

I was promised that a Basic would be sent within four days of my purchase. Atari took four weeks and it is full of appalling bugs.

There is no accurate cursor control command and Gem keeps interrupting programs at run time unless I remember to run them in Edit mode. The manual is incomplete – vital tables and portions of example program listings are missing.

Atari Helpline are very charming – they accurately indicate that a lousy Basic is better than no programming language at all, but they are only just right.

By the way, don't ring Helpline unless you are prepared to pay Telecom at least £5 listening to pop music through the phone – not a pleasant experience.

Don't buy a book called the ST Companion by Jeremy Vine, too much of it is about things that Atari won't give us, like Gem Draw and Paint and Write.

Congratulations to Andrew Bennett, who tells us how to use the Gem INSTALL option – I've never seen a 520ST where this worked.

I long to use my machine – my business needs it and here it sits, nothing to do but look at it and play with the word processor which is vastly inferior to the Wordstar I ran on my 48k North Star Horizon eight years ago. Heck, it doesn't even tell me when I reach the end of a page.

The line counter counts the lines from the top of the screen, as useless a piece of information as one could hope to be given.

Yours, still hoping that he hasn't been had for a total wally, but hope is waning. — **Martin Frey, Appledore, Kent.**

Happy victim

DO I detect a note of resentment in Allan J. Palmer's letter from the February edition of Atari User, concerning the bargain priced 800XL units. Could it be that he has paid twice the price for his?

As a happy victim of the Atari master plan to grab a larger slice of the market I can confirm that I and at least three other new owners have units which are fitted with the Revision C ROMs, so Mr Palmer you have badly misjudged Atari and all that it stands for.

With regard to the comments about the staff of outlets such as Dixons, Boots or Laskys – more power to them. They provide just as good a service if not better than the so called specialist

→

computer shops which, in my area appear to have a minor interest in Atari and associated software – if you happen to own a Commodore or Sinclair thats different.

Apologies for sounding off but that letter particularly riled me. – **A. Abercrombie, Plymouth, Devon.**

Contact needed 1

I OWN an Atari 130XE Data Recorder and 1050 Disc Drive which I have just bought, and would like to correspond with Atari users anywhere in the world. – **Sergio Trigo, Rua General Silva Freire 151, 4D 1800 Lisbon, Portugal.**

American source

IN the February Atari User there was a letter asking for information about software for bridge.

While researching some of my older computer magazines I found an advertisement in the October 1984 edition of Antic which offers a Bridge Pro for the Atari which should work OK on the 130XE.

The Californian company concerned was Computer Management Corporation, 2424 Exbourne Court, Walnut Creek, CA 94596 (415) 930-8075. – **A.J. Daniel, Worlington, Suffolk.**

Bridge in sight

A.G. FERMOY of Orpington wrote to you regarding Bridge for the 130XE.

I own an 800XL and decided in October to buy Computer Bridge for my husband for Christmas. I eventually tracked down a supplier who imports it from the States. Unfortunately due to problems with the manufacturer it took over three months to arrive but it was well worth the wait to see the pleasure on my husband's face when he opened his belated surprise present.

The staff of the company concerned, Software Express, were very patient and sympathetic when I kept chasing them as Christmas drew nearer, and did all in their power to get the package on time. – **Mrs S.D. Morgan-Griffiths, Ashford, Kent.**

ATARI USER Mailbag

WE welcome letters from readers – about your experiences using the Atari micros, about tips you would like to pass on to other users . . . and about what you would like to see in future issues.

The address to write to is:

Mailbag Editor
Atari User
Europa House
68 Chester Road
Hazel Grove
Stockport SK7 5NY

Flight simulator

I AM interested in flight simulation programs and have all the programs that I know of, I'm sure there are more.

I am looking for an interested party to assist in designing a definitive flight simulation program.

Through my knowledge of actual flying, general interest in aviation and seeing the good and bad parts of the many flight programs, I feel I can offer the basis for a realistic program.

Although I have no knowledge of programming the Atari 800XL or BBC B that I own, I do have basic knowledge of the machine operation.

I would be pleased to hear from anybody who has a flight simulation program that is not generally available, or from anyone interested in helping me get this project off the ground. – **Alex J.M. Ford, 27 Colne Avenue, West Drayton, Middlesex.**

Loading routine

IN the January Mailbag you advised a reader who wanted his Basic programs to run automatically when loaded, to use SAVE "C:".

However this uses a lot more tape than with CSAVE, so your reader might be interested in the small routine below, which loads and runs CSAVEd programs.

First, SAVE"C:" the routine on to tape and then CSAVE your Basic program after it. To load, Rewind the tape, type RUN"C:" and sit back. – **P.J. Rixon, Shefford.**

```
10 REM *** AUTORUN ROUTINE ***
20 FOR X=0 TO 18:READ N:POKE 1536+X,N
30 NEXT X
40 GRAPHICS 18:? #6;"   NOW LOADING":R
EM INSERT TITLE SCREEN GRAPHICS HERE
50 POKE 764,12:X=USR(1536)
60 DATA 162,253,154,169,183,72,169,84,
72,169,4,32,182,187,169,255,76,4,187
```

Contact needed 2

WHY don't all you modem users give England's biggest Atari bulletin board a call?

It has eleven special interest groups, catering for most home micros and it also has a sig for Sysops only, which is for sysops of any BBS to use for exchanging information.

Some of us Atari sysops are trying to organise an Atari sysops club to help each other. For more details yell for me on the board.

The board is on 0903 503711 ring back 24 hours a day. It is a 300 baud system. – **SYSOP ROY Wabbs, Worthing, Sussex.**

Interface advice

I HAVE just bought a printer to go with my 800XL. Having tried an Atari 1027, I decided it was too noisy and slow for me so I purchased an 850 interface and a Smith-Corona fastext 80 dot matrix printer.

I acquired them both from a shop in Warrington called All-computers. I must recommend them as being extremely helpful and keeping a good selection of software for the Atari.

When I hooked up the printer and interface and tried out my Home File Manager I discovered it would only print out the letter X in place of a character.

So borrowing an Epson MX80 from work, I linked this to the interface and tried again. This time it printed out the data, only it was all in italics.

Searching the Epson and Smith-Corona manuals I discovered that the Home File Manager was sending out Ascii character codes in the range of 128 to 255. This was too high for my printer, and provided italics on the Epson.

So I ground the MSB on the data lines by putting the wire on pin 15 on to pin 11 on the plug going into the 850 interface.

I hope this information comes in handy for other Atari users who are in the same position. Could we have a disc of the best of Atari User programs, in the near future? – **Gary G. Bates, Bootle.**

Ribbons available

FOR all those frustrated owners of the Atari 1029 printer who are experiencing difficultv in obtaining replace-

→

ment ribbons, Commodore MPS 801 ribbons are a direct replacement.

They are available from larger branches of Boots with computer departments, at £2.95. – **A.R. Hussey, Reading.**

Library source

BEING newly initiated to micros, I have been trying to gather as much information as possible about functions and programming my 800XL.

Having just acquired my February copy of Atari User, *I read with interest in Mailbag that there are a few other people with similar quests.*

Well the point of my letter is to bring to the attention of anybody interested that certain books are available at local libraries. I myself have been able to get: "The Atari XL Handbook, by Lupton, "Get More From Your Atari", by Ian Sinclair and "Atari Basic Programs in Minutes", by Stanley R. Trost in Southampton main library. – **T.D. Archer, Southampton.**

● A good tip. People often forget that local libraries will also order books for you.

Out of data error

I'VE just bought my Atari 800XL and finding the operators manual as useful as second hand toilet paper I went on the hunt for some books on how to use it.

I found "Basic Basic", by Donald M. Monro which gave me a foundation at least.

My local software shop had a few games programs as did Boots. I found the assistant in Boots helpful – he pointed out your magazine so I bought the February edition.

As a newcomer to home computing I must admit I found bits of it hard to understand, namely the checksum list. How do I use them?

Also I typed in the program for Make time for a time clock by Paul Lay. Ran the program and all that comes up is the first two print lines followed by Error 6 at 110.

I've checked all the program and found a few data errors which I corrected, but still no joy, just Error 6 at line 110. What do I do?

Please could you also give me the address of my local Atari club as this may help me get more use out of what could be a very useful computer. – **David C. Chapman, Milton Keynes.**

● Error 6 is an out of data error, so presumably you've missed something out somewhere between lines 530 and 890.

The Milton Keynes Atari Users Group contact is T. Jordan, 18 Buckman Close, Greenleys, Milton Keynes. Tel: 0908 314439.

Lost illusions

AFTER more than a few months' reading around I decided that the Atari 520ST would be a very good machine for small business applications. Just a little more research would, I thought, finally convince me.

The local computer shops, listed by Atari in their recent advertising promotion in most of the magazines either did not have an ST and/or software.

Well I thought, I'll go to the horse's mouth, so I wrote to

Atari UK – and from them received absolutely nothing.

When in Peterborough recently while stood next to a 520ST a salesman said: "Forget it (the ST) wait 'til the Commodore Amiga gets underway".

By now my enthusiasm was getting battered. But I had the good luck to find a copy of Atari User *and bought it. Now, I thought, I'll really get to know something, and I did.*

The Whittaker correspondence (February, Atari User, *page 55) convinced me of what I should do after all my searching, reading and writing – Skip the Atari and its "Big event of 1986 Show". –* **M. Smelt, Gainsborough, Lincs.**

● We think you're missing out on a great machine, but that's your choice.

Helpful Mailbag

I WOULD like to say thank you for the excellent magazine. The Mailbag section helps with minor everyday problems, for example, what revision your Atari has.

The article concerning VAL in February's issue also contained a useful PEEK location to determine which revision A, B, C, you have. – **A.B. O'Neill, Portsmouth.**

Really full of heart

DISHEARTENED. Well I am, but my new Atari 800XL certainly is not, It's full of heart.

So much so that when in Modes 1 and 2 I POKE 756,226, which I suspect should give me a clear screen on which to print characters from the alternative graphics set, instead I get a whole screen of heart shapes (character 0,32).

The POKE command has worked because I can overprint these with any character from the alternative set using COLOR and PLOT in the usual way.

What's up? Have I got it wrong or is there a bug in there somewhere? Either way, please tell me what I should do. Whatever happens, I want my computer disheartened – just a little. – **John J. Quinn, Gt. Yarmouth.**

● Nothing's wrong – you just need to read Dave Russell's graphics article from our July 1985 issue. He dealt with exactly this problem.

Slower scrolling

ONE thing that annoys me about the Atari is that the list scrolls so fast it is virtually impossible to find, for example, the value of a certain variable.

Therefore I have created this program in order to avoid wear on the Break key or repeated typing in of List X, Y.

```
30000 REM LIST SLOWER
30010 REM BY PEREGRINE HILL
30020 POKE 752,1:REM TURN OFF CURSOR
30030 ? "STARTING LINE?":INPUT ST
30040 ? "FINISHING LINE?":INPUT FI
30050 ? "INCREMENT?":INPUT IN
30060 ? "SPEED?":INPUT SP
30070 FOR LIST=ST TO FI STEP IN
30080 LIST LIST
30090 FOR X=1 TO SP:NEXT X
30100 NEXT LIST
30110 POKE 752,0:REM CURSOR BACK ON
```

A recomended speed for this is about 250 but it depends how fast you can read. – **Peregrine Hill, London.**

American disc drives

A LETTER in the January 1986 Atari User *of particular interest to me concerned using American disc drives in Europe and the question of the power supply.*

I too am interested in buying an American disc drive, but am unsure of finding a transformer to handle the power difference and also 50 Hertz/60 Hertz cycle.

It was heartening to read that a normal Atari transformer would do the job. But in Mr Bloodworth's letter and your reply it was never mentioned if he was buying an American 1050 or an alternative, such as an Indus, Astra and so on.

Personally I'm interested in an Indus GT. Would the Atari disc transformer work with this drive or would I have to find another transformer?

I await your reply with great interest, and hope you give a positive answer as I'm itching to order one. – **P Mallin, Holland.**

● The Indus GT does not use the same power supply as the 1050, unfortunately.

Considering the relative prices, your best alternative would be to purchase a normal 1050 and US Doubler chip, which will provide you with just about everything that the Indus does, plus a much better chance of getting service cover should anything go wrong.

Composite adapter

I OWN an Atari 130XE and would like to be able to use the RGB computer display which is fitted to my Hitachi monitor/TV.

Some time ago I bought a lead which fitted into the monitor socket in the computer and RGB socket in the TV.

When I use this, however, all I get is a blue and yellow screen accompanied by an annoying crackling. A friend once told me that an RGB interface was available and that this would do the trick.

Could you please tell me if such a device is available, and if so give me a price. If not, then could you tell me of any other way? – **Philip Benson, Rayleigh, Essex.**

● Composite to RGB adapters are very expensive – far more than your computer, for example. You would be better trying to connect the composite monitor output into a composite monitor, as there is absolutely no advantage in using RGB with an 8 bit Atari.

If the connection on your TV is a Scart type, or any other type which may be used with a video recorder, you can connect the Atari directly to it just by using the correct cable. Consult your TV dealer for more information.

Assembler advice

I HAVE an 800XL and would like to learn machine code, I therefore want to buy an assembler. Could you recommend a good one?

Also, is there a good Pascal available for the Atari? – **M. Malik, Ilford, Essex.**

● The best assembler on the market for the 8 bit Atari is probably OSS's MAC/65 cartridge.

This is a full featured macro assembler, with resident full screen editor and de-bugger. It can be used for anything from simple routines to writing a full machine code game.

However for starting off the Atari Assembler/Editor is a cheap, but very slow alternative.

Draper Pascal is available in the States, but we don't know of any Pascal available in the UK for the Atari.

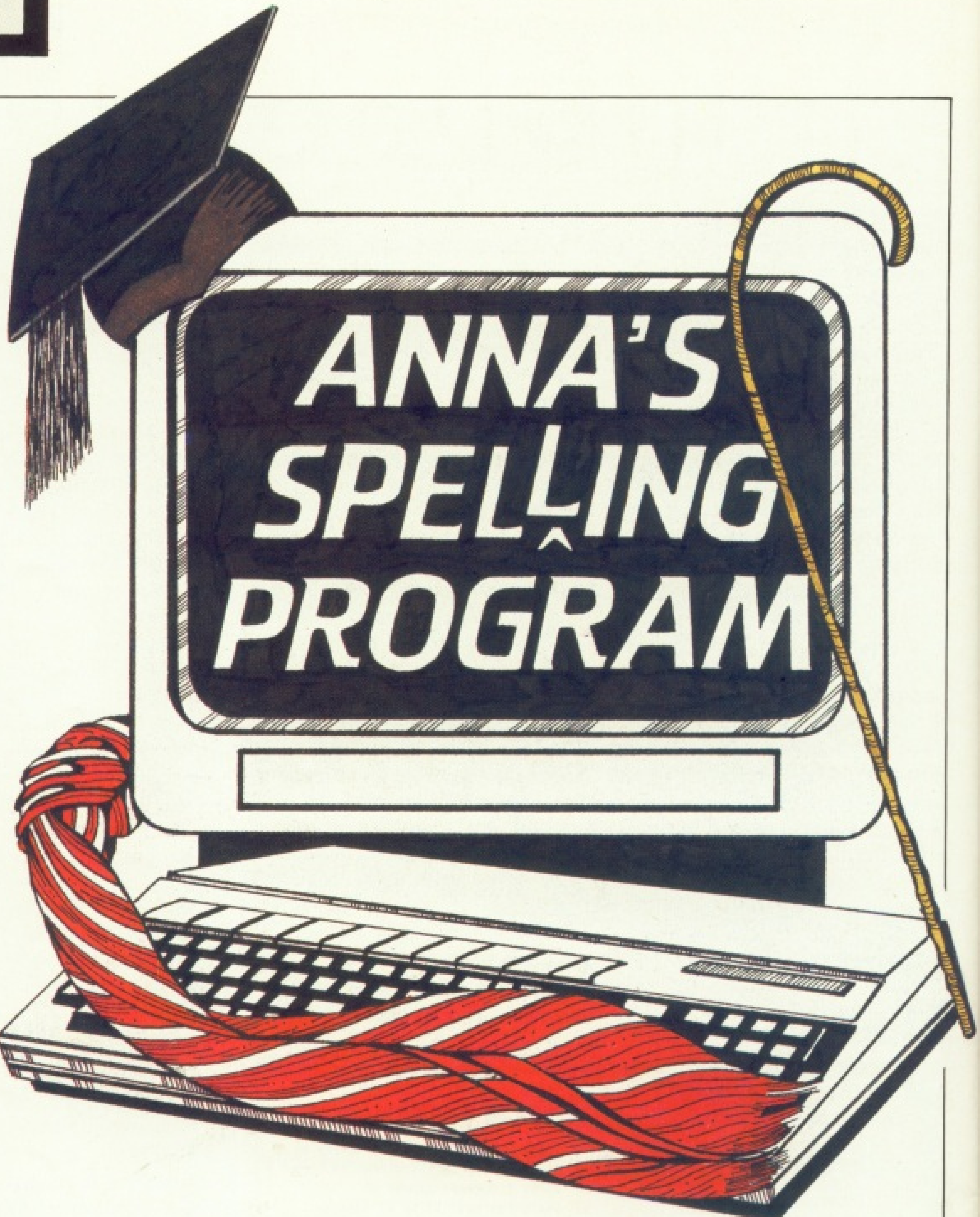
Knocked black and blue

I AM having a little colour trouble on my 800XL. On the set-up screen black and blue the blue area goes a slight greenish colour until I give the computer a little knock, when it goes back to blue for a short while.

It is also annoyingly noticeable on some games software. Could you tell me if this would just require a minor adjustment?

I would also like to suggest that you could do some hardware reviews as I'm sure your readers would find them beneficial. – **N. Taft, Little Sutton, South Wirral.**

● It would probably be best to take your equipment back to the dealer for a check-up.



THIS program was written in response to my youngest daughter's request for something to administer her weekly spelling test.

It illustrates string storage in a loop by string joining, as opposed to a string array which the Atari lacks.

The user is invited to enter spellings that are to be tested. The words are then displayed singly on the screen and the user is invited to enter the spelling.

If the spelling is incorrect the word is redisplayed until a correct response is given. The number of wrong responses is counted and suitable reinforcements are displayed at the end of the program. These can be altered to suit the individual child.

Although the program works as it is, readers could use it as the basis for a more ambitious program. For example, you might want to allow no more than three wrong responses or you might want to give different feedback depending on the nature of the error.

Adults could make use of the program as part of a foreign language learning exercise, or even to improve their own spelling.

Make sure you enter the words correctly in the first instance.

Mike Rooke

MAIN VARIABLES

A$	Main string that substrings are joined onto.
NM$	The substring name.
X	Number array to record number of letters in substring.
S$	Spelling attempt.
T	Error counter.

PROGRAM STRUCTURE

30	Dimensions strings and arrays.
50	Initialises variables.
80	String joining and counting sequence.
110	Printing substrings from main string.
140	Error counter.

```
10 REM ** ANNA'S SPELLING PROGRAM **
12 REM **      BY MIKE ROOKE      **
20 PRINT CHR$(125)
30 DIM A$(200),NM$(20),X(50),S$(20)
40 PRINT :PRINT "HOW MANY SPELLINGS DO
 YOU WISH TO     LEARN";:INPUT N
50 PRINT "PLEASE ENTER SPELLINGS ":J=1
:A$="":T=0
60 FOR K=1 TO N
70 PRINT "SPELLING NO. ";K;:INPUT NM$
80 A$(J)=NM$:X(K)=LEN(A$):J=1+X(K)
90 NEXT K
100 PRINT CHR$(125):X(0)=0:FOR K=0 TO
N-1
110 PRINT A$(X(K)+1,X(K+1))
115 FOR DE=1 TO 600
116 NEXT DE
119 PRINT CHR$(125)
120 PRINT "ENTER THIS SPELLING NOW ";:
INPUT S$
130 IF S$=A$(X(K)+1,X(K+1)) THEN PRINT
 "CORRECT ":FOR DELAY=1 TO 600:NEXT DE
LAY:PRINT CHR$(125):NEXT K
135 IF K=N THEN 180
140 IF S$<>A$(X(K)+1,X(K+1)) THEN T=T+
1:? :? "INCORRECT. THE WORD WAS : "
160 FOR DELAY=1 TO 300
170 NEXT DELAY:GOTO 110
180 IF T=0 THEN PRINT :PRINT "YOU'RE A
 WHIZZO!!    YOU GOT THEM ALL CORRECT,
 BUT CHECK AGAIN TOMORROW."
185 IF T=1 THEN PRINT :PRINT "ONLY ONE
 WRONG.   YOU'RE NEARLY A     WHIZZO.
TRY AGAIN LATER."
190 IF T=2 THEN PRINT :PRINT "ONLY TWO
 WRONG. QUITE GOOD. TRY AGAIN."
200 IF T>2 THEN PRINT :PRINT "YOU DIDN
'T LEARN THEM PROPERLY.       TRY AGAI
N"
210 END
```

Get it right!

LINE	CHSUM	LINE	CHSUM	LINE	CHSUM
10	6205	12	5363	20	2936
30	4957	40	13331	50	9015
60	2166	70	7073	80	5335
90	1349	100	6704	110	3943
115	2484	116	1542	119	2936
120	8514	130	18346	135	2745
140	12475	160	3492	170	4051
180	19549	185	17289	190	13057
200	14320	210	836		

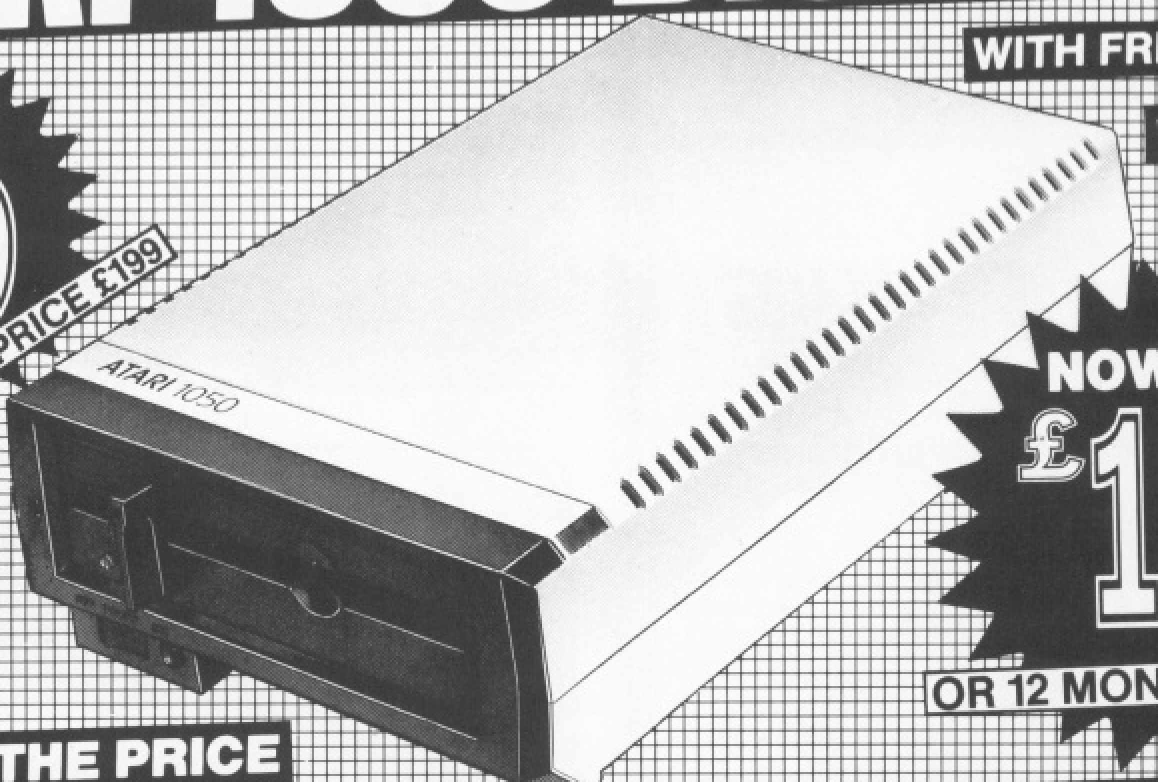
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The 1050 is a dual density disk drive. This refers to the amount of information that can be stored on a single side of a disk. Three things determine the density of a particular disk format: The number of bytes in each sector, the number of sectors per track and the number of tracks per disk. Single Density formats give eighteen 128 byte sectors on each of their 40 tracks, thus giving a total capacity of 18×128×40 or 92,160 bytes. Double Density formats give sectors that are twice as large as the single density sectors and are capable of holding 256 bytes on each sector. This yields a capacity of 184 kilobytes per disk. There is also a third format, Dual Density which is the one used by Atari's new 1050 Disk Drive with DOS 3 and DOS 2.5. It has 26 of the 128 byte sectors on each of its 40 tracks, giving a total capacity of 133 kilobytes, which after formatting comes down to 127K. The 1050 is capable of running disks formatted in either single or dual density and can run either DOS 2, DOS 2.5, or DOS 3, this makes the machine completely compatible with all of the previous old style software. The 1050 is compatible with the 400/800 and the new XL/XE series of Atari computers. However, if you run a 400 or 800 you would need to already have at least 32K RAM of memory in your computer. The 1050 has a built-in 6507 micro processor and an onboard ROM operating system for automatic standby capability. It has automatic switching from single to enhanced density modes. It has a 'Disk Busy' indicator and up to 4 disk drives can be controlled at once. Included with the Disk Drive is the Owner's Manual, the DOS 2.5 Master Diskette, Reference Manual, I/O Data cable and Mains Adaptor. The 1050 disk drive comes with everything you need to plug it in and use it immediately.

FREE SOFTWARE

The new price for the 1050 disk Drive is not the only good news for Atari Owners. The Disk Drive now comes with three FREE software titles, in addition to the DOS 2.5 Disk and Manual. The first of these is The Payoff on disk, a new adventure game in which you play the leading role. On the reverse side of this disk is a demonstration program showing Atari's amazing sound and graphics. Also included is Home Filing Manager which will help you organise your files. It allows you to catalogue and file details of books, birthdays, your stamp collection or anything else which would normally require you to use filing cards. The software which comes free with the Disk Drive carries a normal retail price of £34.98 and is as follows:

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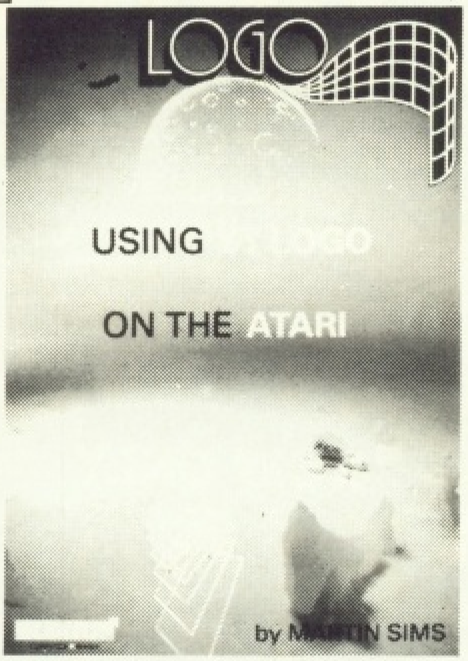
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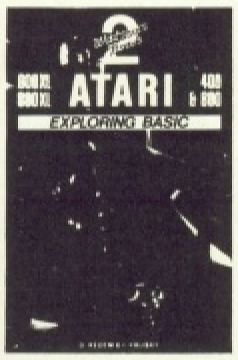
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American Scene

EDWARD SHARK reports

FOR many years the availability of new software and peripherals for Atari machines has depended heavily on America as the main source of supply. Recently this has begun to change, with more and more UK software houses turning to the development of software for the Atari.

Even so the majority of software released in the UK is of US origin, imported by companies such as US Gold, Ariolasoft and more recently Databyte. They are all engaged in licensing programs from American software houses and releasing them on to the British market and usually at lower prices than in their country of origin.

However even when a UK company licenses a newly released US title for manufacture in Britain it can take some considerable time to see it finally arrive in local computer stores.

Since Atari first started making an impact in Britain, back in the days of Cherry Leisure – the first company to import Atari products – UK users have found difficulty in obtaining American software as soon as it was released. More recently we have seen increased activity from two major Atari distributors, Software Express and Silica Shop, who both specialise in getting new software into the UK from the States.

Looking at developments in the two markets, it becomes apparent that the British are beginning to show much more independence, illustrated by the arrival of new software houses on the Atari scene, but British users still have to rely heavily on their cousins across the ocean to lead the way.

Many software houses have taken advantage of the 512k of RAM in the ST and developed sophisticated adventure games with both text and graphics.

Penguin Software has released Transylvania and a follow up called The Crimson Crown (Return to Transylvania), the first in a series of illustrated novels with a 1000 word vocabulary and 100 detailed graphic pictures. However these are not up to the quality of those pictures to be found in The Pawn from Magnetic Scrolls.

Sundog: Frozen Legacy will turn a few heads. Available for the colour monitor version only, this is a massive science fiction adventure covering 50 cities on 18 worlds in 12 star systems. The real-time 3D action with scrolling display has its roots in Elite but you can also walk into buildings and barter with the animated characters you meet there. A very impressive piece of software.

For younger people there is Walt Disney's Winnie the Pooh in The Hundred Acre Wood, produced by Sierra On-Line. This sophisticated adventure, for 7 year olds and upwards, features all the favourites – Tigger, Eeyore, Piglet, Kanga, Roo, and, of course, Christopher Robin.

The package comes complete with a large map and a colourful booklet. Future releases include Mickey's Space Adventure, Goofy's Word Factory, and Donald Duck's Playground.

Activision's latest acquisition, Infocom, has released its latest adventure, called Ballyhoo. In this you join a travelling circus and find yourself engaged in the search for the owner's daughter.

It's an adventure that really lives up to the Infocom name. It has just started arriving in Britain and is currently retailing for £34.95 and is available for both 8 and 16 bit Atari machines.

One exciting new company in the ST field, based in Los Gatos, just outside Sunnyvale, California, is quaintly called Hippopotamus Software. Hippo, as I affectionately call them, have been engaged in producing software for the ST range for the last few months, but I was thrilled to find out what was in two new packages they are developing. Both are aimed at the music market, one for the home user and the other for the professional musician.

They are both sound sampling devices. Basically they are programs that allow you to record a sound, either from a microphone or a synthesiser and play it back through your computer. But there's much more to it than this because you can edit its characteristics in many different ways.

For instance you can speed up or slow down the playback, or reverse the sound wave so that it is played back in the opposite direction to the way it was recorded. Or you can take the middle of the sound wave and place it at the end or at the beginning. Put like this, it might not sound that fantastic, but the resultant effect is quite outstanding.

Quincy Jones, one of the world's most talented musicians and producers, has already placed his order for the package.

If you would like a better idea of what some of the effects sound like, just listen to groups like Go West, Sigue Sigue Sputnik and Paul Hardcastle.

In these articles I hope to bring you first news of new products appearing in the States, although I will not be attempting to give you detailed reviews. This I will leave to *Atari User's* team of specialist reviewers.

Next month I will be bringing you a lot more gossip about new products and some still in development, plus some exciting news from Atari in the USA.

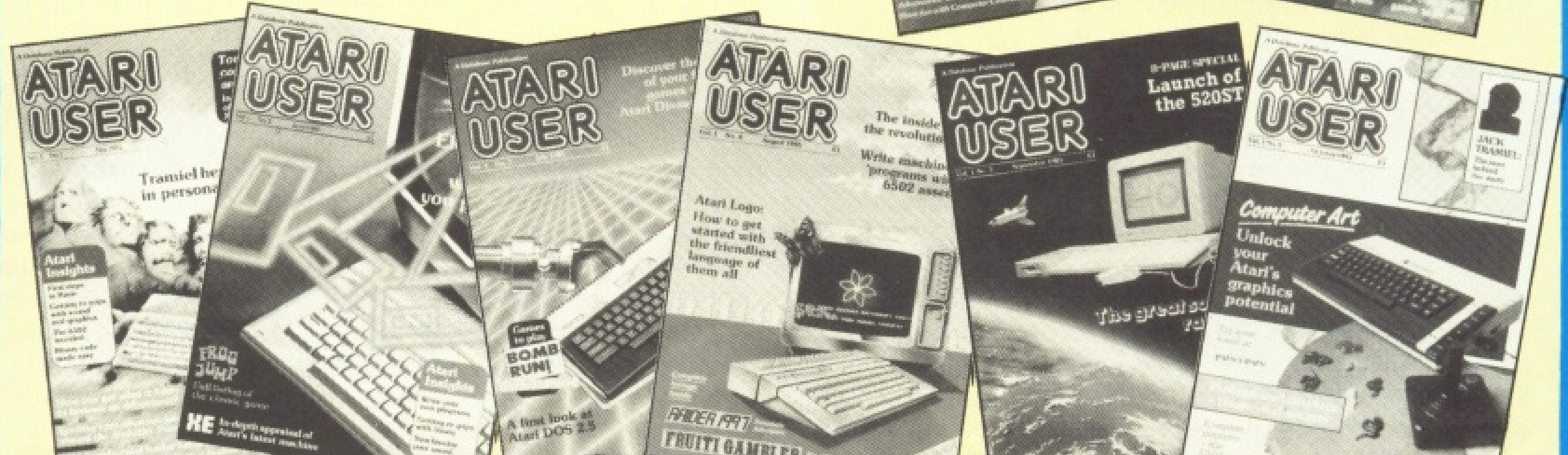
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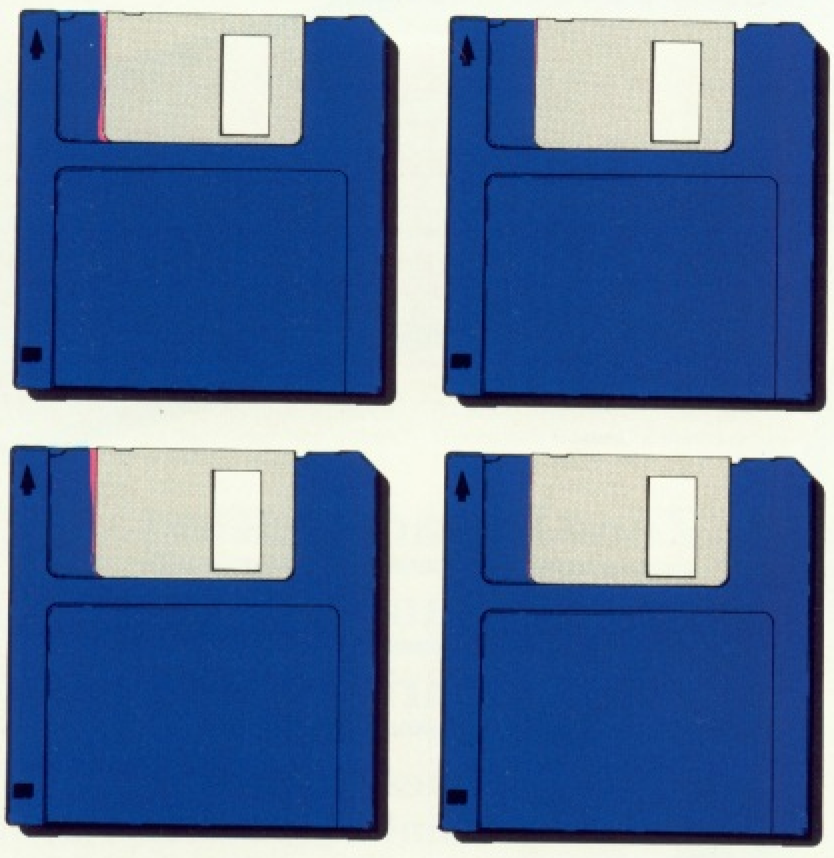
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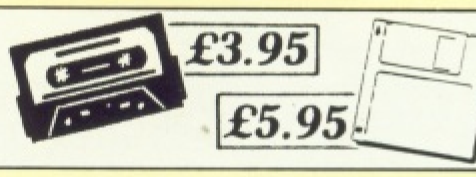
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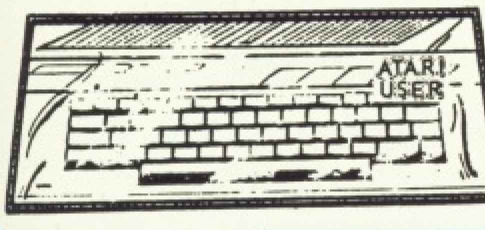


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JULY: Bomb Run: Flatten the deserted city and land safely. **Disassembler:** Find out what's going on deep inside your Atari. **Treasure Hunt:** Use logical thinking to find the treasure. **Password Generator.** Keep generating passwords till you find one you like. **Keyboard:** Convert your micro into an organ. **Quasimodo:** Can you sort out the mess of ropes in the belfry?
AUGUST: Assembler: Make machine code programming easier. **Fruiti Gambler:** Save money with this fruit machine simulation. **Mandala:** Complex patterns made easy. **Protection:** Protect your programs from prying eyes. **Display List:** Demonstration programs. **Raider 1997:** Futuristic text adventure. **Touch Tablet:** Demonstration programs.
SEPTEMBER: Maze Munch: Help Horace the Blob munch the maze monsters' morsels. **Data Maker:** Convert your machine code routines to DATA statements. **Display List:** Demonstration programs. **Screen Dumps:** Dump your Mode 8 screens to a 1029 printer. **Bricks:** Solve the Bricks problem.
OCTOBER: Pontoon: Twist? Bust! **Memory Dump:** Examine memory in hex and Ascii. **Display List:** Demonstration programs. **Wrap Trap:** Action game for one or two players. **Computer Canvas:** Make your own micro masterpiece. **Assembler Update:** Improvements for RAW assembler. **Ram Disc:** Make the most of the 130XE's extra memory.
NOVEMBER: Guy Fawkes: Help Guy escape from the guards. **Converse:** Teach your Atari to be a psychotherapist. **Display List:** Demonstration programs. **Bitwise Operators:** Utility to provide logical functions. **Circle:** Draw and fill a circle. ***Plus:*** Freebie of the month – **Creepshow** machine code pinball game.
DECEMBER: Countdown: Micro version of the famous TV game. **Get It Right!:** Atari User's own check-sum program. **Disco:** Son et lumière on your Atari. **List Utility:** Makes listing easier. **Display List:** Demonstration programs. ***Plus:*** Freebie of the month – **Jane's Program** machine code entertainment.
JANUARY 1986: Bells: Help Mr Humpy rescue Esmerelda. **Get It Right!:** Atari User's own checksum program. **Alien Attack:** The game to accompany the machine code series. **Lister:** Make listing programs easy. **Dots:** Play the micro or another player at this strategy game. **Dump:** 1020 printer/plotter routine. ***Plus:*** Freebie of the month – **Scramble Fighter** machine code game.
FEBRUARY: Micropainter: Programs to manipulate Micropainter screens. **Clock:** Interrupt driven clock utility. **Flasher:** Flashing colour utility. **Bounce!:** Simple to play, hard to master. **Bridge:** The thinking person's card game. ***Plus:*** Freebie of the month: **Demon's Lair** – an adventure game you may never escape from.
MARCH: Horse Play: Knight's tour program. **Basic Compiler:** Program to accompany the new series. **Alien Attack:** Final part of assembly listing. ***Plus:*** Freebie of the month: **Winston in the Caves** – can you keep your head and help Winston find his?
APRIL: Synthesiser: Activate the hidden depths of the Atari sound chip. **Disc index:** Keep track of disc files and free space with this index printing program. **Graphics:** Make the most of Modes 12 and 13. **Mancuna:** Can you beat the game that learns from its mistakes?
MAY: Cavern Escape: Can you help In-I-Go Joe escape from the labyrinths with King Muneebag's gold? **Player Missile:** Program to accompany the start of the series. **Spelling:** Automate those weekly school spelling tests.

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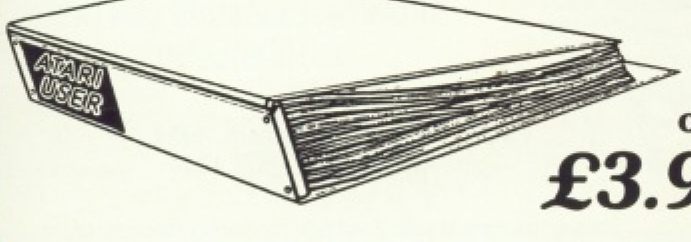
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